urnal of the

AMERICAN PHARMACEUTICAL ASSOCIATION

. X, NO. 4
SECUTIVE NO. 7

Practical Pharmacy Edition

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APRIL, 1949

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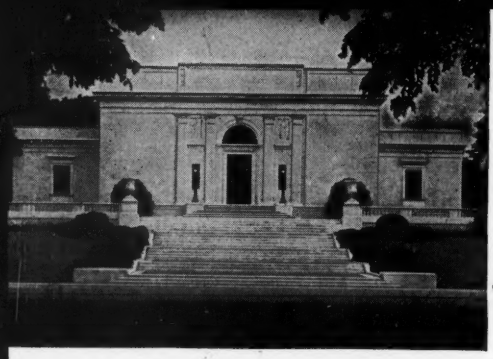


STRAIGHT FROM HEADQUARTERS

By *ROBERT P. FISCHELIS*, Secretary
AMERICAN PHARMACEUTICAL ASSOCIATION

Our Editorial Staff

IN RECENT months THIS JOURNAL has had the benefit of more direct A. PH. A. staff participation in the production of its editorial content. With one exception, the names on the masthead are not new to our readers. The newcomer is Walter H. McDonald, who has been named managing editor. He brings to this position a broad background of journalistic training and experience. A native of Jacksonville, Florida, Mr. McDonald received his education in journalism at the University of Florida at Gainesville and Mercer University at Macon, Georgia.

He has been associated with several Florida newspapers and was associate editor of the *Florida Municipal Record* while serving as assistant secretary of the Florida League of Municipalities. During World War II, Mr. McDonald served as information specialist in the U. S. Department of Agriculture and in 1944 he became editor of *The Information Letter* and assistant director of information of the National Canners Association. He reported the meetings of that Association and edited its annual proceedings. In this capacity, Mr. McDonald also contacted the Food and Drug Administration and other government departments. More recently, he edited the publications of the National Paint, Varnish and Lacquer Association and was responsible for its publicity material.

As managing editor of THIS JOURNAL, Mr. McDonald will have charge of its layout and production. He also will be the ASSOCIATION's contact man with the press at annual conventions and will prepare news releases, radio scripts and other public relations material.

The professional, scientific and technical contents of THE JOURNAL are furnished by authors of papers presented to the meetings of the ASSOCIATION, its Sections and Local Branches, and also by authors specially selected to contribute certain articles of current inportance and by staff members who specialize in certain phases of the ASSOCIATION's work.

Justin L. Powers, editor of the Scientific Edition of THIS JOURNAL and chairman of the Committee on National Formulary, and Melvin W. Green, director of the Laboratory and Library Services of the ASSOCIATION and member of the N. F. Committee, edit most of the scientific matter. They also answer many of the queries which furnish the basis of the "Prescription Information Service," and Dr. Green reviews the information published on new drugs, N. N. R. and similar material for scientific accuracy. Both Dr. Powers and Dr. Green are registered pharmacists and have had long experience as teachers of pharmacy and pharmaceutical chemistry. In addition to degrees in pharmacy they both hold Ph.D. degrees.

Harold V. Darnell, a well-trained pharmacist, who came to the ASSOCIATION last year as assistant to the secretary, carried the work of managing editor from the time Mr. Sonnedecker resigned to take up graduate study at the University of Wisconsin last September until Mr. McDonald joined our staff in February. He is a graduate of Purdue University with a background of

pharmaceutical training as well as experience in State board of health and State pharmaceutical association work. As secretary of the Indiana Pharmaceutical Association he became familiar with many of the problems which the A. PH. A. is called upon to meet. The details of National Pharmacy Week and the continuing joint program of health education with the Public Health Service are being handled by Mr. Darnell who acts as secretary of the Committee on Public Relations. His editorial contributions deal with these and other pharmaceutical and association matters.

Articles and references on economics are prepared or screened by Eleanor Poland, who is a Ph.D. in economics and has had extensive experience in dealing with medical and pharmaceutical problems in the field of medical care. She is engaged in continuous review of researches in the field of medical economics and of proposed legislation bearing on the various phases of pharmacy and public health.

Gloria Niemeyer, a trained hospital pharmacist assigned to the Division of Hospital Pharmacy, who also is assistant editor of the *Bulletin of the American Society of Hospital Pharmacists*, supplies THIS JOURNAL with hospital pharmacy information and coordinates this with the ASSOCIATION'S general information service.

Editorial direction is supplied by the secretary of the ASSOCIATION under the general supervision of the Committee on Publications, which consists of George D. Beal, chairman, B. V. Christensen, Don Francke, Robert P. Fischelis and Hugo H. Schaefer.

THE JOURNAL thus has the benefit of the thinking and planning of an alert staff of pharmacists and other professional men and women, whose experience covers pharmacy, pharmaceutical chemistry, pharmacology, manufacturing, retail and dispensing pharmacy, hospital pharmacy, economics, teaching, journalism, law enforcement, and administration. All are working together to bring each month to our readers an attractive publication reflecting the professional progress of pharmacy.

The editorial staff welcomes at all times the criticisms and suggestions of readers of THE JOURNAL and particularly of the members of the AMERICAN PHARMACEUTICAL ASSOCIATION.

Prescription Renewal

COMMISSIONER Paul B. Dunbar of the Food and Drug Administration started something when he announced in an address to the National Association of Retail Druggists Convention last October that the renewal of a prescription, without the specific order of the physician writing it, constitutes an "over-the-counter" sale of the drug or drugs included in such prescription. This interpretation means to the Food and Drug Administration that when a pharmacist receives a request from a client to renew a certain prescription, without the physician's written order, the pharmacist must either refuse to renew the prescription or ignore the doctor's directions on the original prescription and put up the medicine with a label bearing the names of the ingredients, the condition for which the medicine is to be used and adequate directions for use, including warnings.

This startling pronouncement has left the profession of pharmacy wondering whether there is anyone in the Food and Drug Administration who knows anything about the practice of pharmacy or the practice of medicine or the physician-pharmacist-patient relationship with respect to prescriptions.

Before commenting further on the startling nature of this interpretation of the law, it might be well to point out that:

1. Pharmacists generally are in full accord with the regulation that prescriptions for narcotic drugs, barbiturates and other hypnotic drugs and the "dangerous drugs" mentioned in the law and regulations, should not be refilled without a new prescription.

2. Pharmacists agree with the statement that a prescription is written for a specific patient to treat a specific ailment at a given time.

3. Pharmacists have a definite obligation to the prescriber and to the consumer of a prescription. These obligations were not fixed by the Food, Drug, and Cosmetic Act. They existed for centuries before there was a Food, Drug, and Cosmetic Act.

4. The pharmacy laws of the several States fix the responsibility of the pharmacist with respect to the compounding and dispensing of drugs and medicines, including prescriptions. These laws also provide for the licensure of pharmacists and the employment of their professional judgment

after licensure. In no case do they provide for converting a prescription into an "over-the-counter" sale of the drugs contained in such prescription and substitution of the judgment of the pharmacist for that of the physician in writing directions for use and proclaiming to the patient the composition of the medicine and the possible ailments for which physicians usually prescribe it.

Pharmacists cannot legally (under State pharmacy laws) comply with the interpretation placed on prescription renewal by the Food and Drug Administration. They can, of course, refuse to renew any prescription and that is the course the F. D. A. apparently would like pharmacists to pursue in all cases.

But what of the patient and the doctor? The patient may return to the physician and be told to have his prescription renewed. He then goes to the pharmacist and requests renewal. He does not like to be questioned whether the physician wants him to have the prescription renewed. Nor does the doctor like to be asked repeatedly by the pharmacist whether the prescription may be renewed. The patient may be feeling better after the original prescription has been consumed and he may telephone his doctor for further advice. The doctor may tell him to continue to take the medicine originally prescribed. That is why he goes to the pharmacist and asks for a renewal.

The most recent authentic prescription survey indicates that 35% of the prescriptions compounded are refills. A pharmacy compounding 100 or more prescriptions a day would have to make at least 35 contacts a day with busy physicians to verify a patient's request for renewal of the prescription under the F. D. A. interpretation and it might even then be unable to procure a new prescription in each case without endless follow-up.

Obviously the interpretation is neither sensible as far as the average run of prescriptions is concerned nor can it by any stretch of the imagination be said to be the desire of the Congress which enacted the law. There is nothing in the debate on the bill to warrant such an interpretation.

The expedients suggested by F. D. A. to overcome the impractical aspects of the interpretation, such as having the physician indicate in advance on the prescription how many times it may be renewed, are not realistic and the unrestricted use of the designation "N. R." on every prescription lays the physician open to the criticism that he is angling for another fee.

We are opposed to the indiscriminate renewal of all prescriptions but we believe that State laws and codes of ethics can be relied upon to regulate the renewal factor equitably for all concerned. If the interpretation given by Commissioner Dunbar is the last word of the F. D. A. and the courts on this subject, there is no other recourse to the professions and to the intelligent public than to request that the law be amended to make such an interpretation impossible.

The Council of the AMERICAN PHARMACEUTICAL ASSOCIATION has authorized the naming of a committee to include representatives of the A. PH. A., the N. A. R. D., the American Society of Hospital Pharmacists, the College of Apothecaries, and the National Association of Chain Drug Stores to confer with the F. D. A. on this and other matters dealing with regulations and interpretations under the Food, Drug, and Cosmetic Act as they affect practicing pharmacists. This Committee will be known as the Conference Committee on Federal Food, Drug, and Cosmetic Law Problems. A. PH. A. appointees include Hugo H. Schaefer; Mearl D. Pritchard, also representing the American College of Apothecaries; and Don E. Francke, also representing the American Society of Hospital Pharmacists.

At the time this is written, it was expected that a meeting of the Committee would be held in Washington on April 18 and it is expected that the N.A.R.D. will be represented by John W. Dargavel, Herman S. Waller and George H. Frates.

Word has been received from Commissioner Dunbar that the F. D. A. will welcome the appointment of a contact committee representing retail and dispensing pharmacy for the purpose of maintaining liaison with the F. D. A. and promoting a better understanding by the profession of pharmacy of the requirements of the Federal Food, Drug, and Cosmetic Act. This committee should be able to produce results equally as good as those obtained by the Pharmaceutical Contact Committee of the American Drug Manufacturers Association and the American Pharmaceutical Manufacturers Association in promoting better understanding between the drug industry and the Food and Drug Administration.

Governor of Florida Urges Large Attendance at A. Ph. A. Convention

ALL FLORIDA is pleased that the AMERICAN PHARMACEUTICAL ASSOCIATION has chosen Jacksonville as the site of its 1949 Annual Convention during the week of April 24 to 30. It is my wish that every one of your Association's 11,000 pharmacists could be our guests and enjoy our wonderful climate.

Much of our vigor and health is directly attributable to our enviable climatic location in this hemisphere. Much of it is attributable to our public health officials, outstanding hospitals, and the high caliber of our medical fraternity, and to our pharmacists and druggists—folks like yourselves—who also have had a great deal to do with keeping our citizens healthy.

Florida is proud of its pharmacists and its College of Pharmacy at the University of Florida from which many of our pharmacists have graduated. Not only does the work offered at the College of Pharmacy meet the highest requirements of undergraduate pharmaceutical instruction in this country, but our graduate courses have prepared many teachers and research workers for your profession.

We also are very proud of our Board of Pharmacy which regulates the practice of pharmacy in this State and which has made many outstanding contributions to the development of your profession. Its activity as a member of the National Association of Boards of Pharmacy, in which some of the Florida members have served as president and in other capacities, is evidence of the cooperative attitude which the State of Florida manifests in health affairs which benefit the people of all the States.

Florida graduate pharmacists are employed in many segments of the field of professional pharmacy, including the U. S. Public Health Service and the armed forces. They are contributing not only to the health of our State, but to the welfare of our entire nation.

It is because I recognize your importance to the well-being of the entire nation that I want you to enjoy your visit here, so that you may return to your homes refreshed and inspired to carry on your work against disease.

I understand that you are arranging to visit other parts of our State, which contains too many wonders and scenic spots to list here. Plan to have a grand time. I hope that some day you will be back again, perhaps to settle permanently.

FULLER WARREN,
Governor of Florida

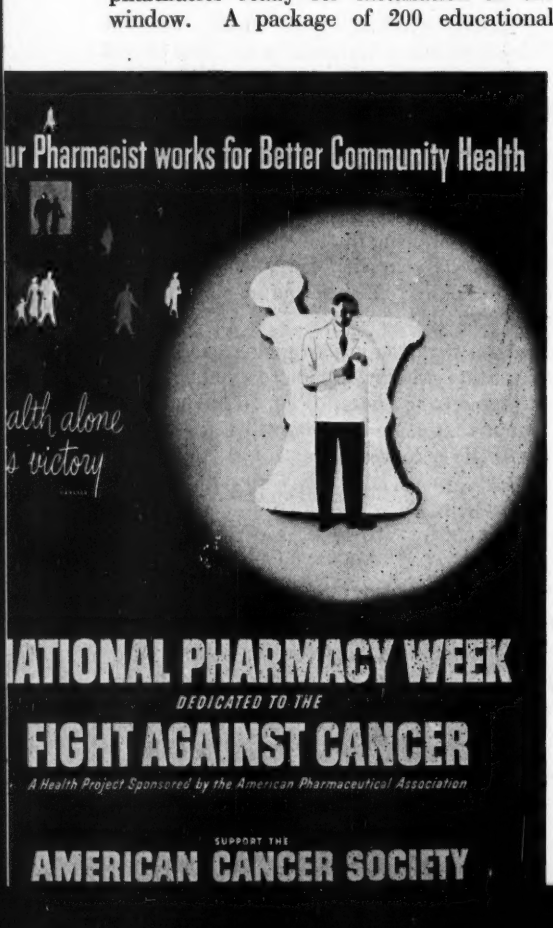
Last opportunity to make reservations for the 1949 A. Ph. A. Convention—April 24 to 30! Wire A. Ph. A. Housing Committee, Tourist and Convention Bureau, 307 Hogan St., Jacksonville, Fla.

Your National Pharmacy Week Display

April 24 to 30

APPROXIMATELY 17,500 window displays of the official National Pharmacy Week poster have been distributed by the AMERICAN PHARMACEUTICAL ASSOCIATION, sponsor of National Pharmacy Week, and the American Cancer Society, for use during April 24 to 30. The window display pieces were distributed to pharmacists throughout the nation who returned the pledge card mailedin February.

The display piece, which is reproduced in black and white on this page, actually is printed in three colors and was delivered to pharmacies ready for installation in the window. A package of 200 educational leaflets on cancer, for distribution by pharmacists to the public, accompanied each display piece.



Value of Window Displays

The value of using show windows to express to the public the professional character of the pharmacy has been amply demonstrated in the past. Every week, but especially during National Pharmacy Week, pharmacists should assure themselves that their windows reflect professional service.

Therefore, in addition to using the official display, pharmacists are urged to install an original display for entry in the national competition. There are three categories in which awards are made:

1. Retail pharmacies—displays by practicing pharmacists.
2. College displays by pharmacy students.
3. Public displays and exhibits, in places other than a pharmacy, installed by any pharmacist or group of pharmacists. This includes hospital pharmacists, local and State pharmaceutical associations, and branches of the AMERICAN PHARMACEUTICAL ASSOCIATION.

▼

Approximately 17,500 pharmacies requested the National Pharmacy Weekly display and leaflets for use April 24 to 30. A black and white reproduction of the display design is shown on the left. The actual display—30 by 40 inches in size—appears in yellow, light green and white on a dark green background. The colors are particularly appropriate for display during the Spring and Easter seasons. Displays will reach participating pharmacists in mid-April, mounted on card stock with easel, ready for installation.

Cooperation Necessary

The cooperation of each pharmacist in installing Pharmacy Week displays, April 24 to 30, represents an important part of the public relations value of the observance. Complete rules for the three divisions of the display competition were printed in the February issue of THIS JOURNAL and also were distributed to all national, State and local pharmaceutical organizations and publications.

Participation aids for National Pharmacy Week are available also from the AMERICAN PHARMACEUTICAL ASSOCIATION, as explained in the February issue of THIS JOURNAL. Approximately 4,000 items on the participation aid list will have been distributed by the ASSOCIATION as this issue goes to press. As time and availability of supplies permit, late orders for participation material will continue to be filled.

Tips on Window Displays

Based on entries in the National Pharmacy Week display competition of former years, a guide to more effective displays may be summed up in two fundamentals: (1) Don't overcrowd. (2) Decide on a central theme and don't try to express more than one idea in the few seconds granted by the sidewalk audience.

Be sure your display complies with other obvious but sometimes overlooked fundamentals: Cleanliness, neatness, orderliness. A good display has a focal point of interest, usually the largest unit in the window. This may be in the center of the window with small units in balance on either side. Or the focal point may be on one side with several subsidiary units providing balance in the remainder of the window.

Lights are usually most effective placed high and out of sight. Tests on comparable windows have shown that the most brilliantly lighted window will stop by far the largest number of pedestrians.

Show cards should be brief, nontechnical and to the point. Legends must be quickly and easily read. Crudely lettered show cards are not economical. A poorly lettered sign can ruin an otherwise productive and effective display.

In selecting materials to carry out the theme everything that does not help to express the central idea should be omitted. Some of the most striking and forceful windows are extremely simple in basic design.

A word of warning: Do not use any display material or signs which contain the advertising of a manufacturer. Because of the purely professional nature of National Pharmacy Week such material disqualifies a display under the rules of the competition. This does not apply, however, to the labels on products displayed in the window.

The observance April 24 to 30 has a twofold purpose: (1) To contribute to the important health problem of cancer control; (2) to call attention to the pharmacist's professional service and his interest in health education. Devoting your windows to the official display and an original professional exhibit will both support and take advantage of the broad over-all 1949 National Pharmacy Week program.

ADA QUESTIONS NEW DENTAL CARE METHOD

Recently published reports of an impregnation method of preventing dental decay developed by Dr. Bernhard Gottlieb of Baylor University have been described as "premature" by staff scientists of the American Dental Association.

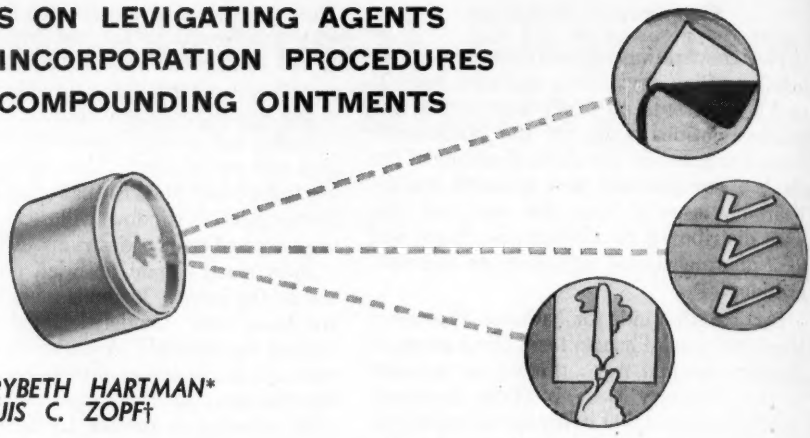
An article in a recent issue of *Collier's* magazine described the treatment as "something which has been perfected and proved in the last few months." The treatment consists of treating the teeth with a variety of chemicals to wall off the tiny fissures of the enamel of the teeth which Dr. Gottlieb contends are the invasion roads for decay-producing bacteria.

Staff scientists of the Association said that there is inadequate clinical evidence either to prove or disprove the claims of Dr. Gottlieb. They warned that until this supporting evidence is substantial there is danger of encouraging false hope in the minds of the 90 per cent of the nation's population subject to tooth decay.

They pointed out that they had no desire to discourage any research work but said that they questioned the wisdom of recommending treatments for the general public until such treatments are proved to be scientifically sound. Their statement continued:

"Future research will either substantiate or disprove Dr. Gottlieb's theory and the claims that he makes for the effectiveness of his treatment. But it is unfortunate that premature publicity has been given to a treatment for which so little scientific evidence is available."

NOTES ON LEVIGATING AGENTS AND INCORPORATION PROCEDURES FOR COMPOUNDING OINTMENTS



by *MARYBETH HARTMAN** and *LOUIS C. ZOPF†*

THE production of a good ointment is basically dependent upon the (1) incorporation procedure, (2) levigating agent or agents employed, and (3) compounding skill of the pharmacist. Of the more common medicinal agents incorporated in ointment vehicles none presents a greater challenge to the pharmacist's skill and dexterity than those prescriptions containing sulfur, Peruvian balsam, ichthammol, coal tar or phenol. In a study conducted at the State University of Iowa, six substances were employed as levigating agents and the one most desirable for use in incorporating each of the above ingredients was determined. Incorporation methods for coal tar also were reviewed. Many ointments require no special skill or manipulative technique in their preparation and therefore only those which frequently present compounding problems were studied.

This article presents a résumé of the most desirable levigating agents and a satisfactory technique for the incorporation of certain medicinal agents in ointment vehicles. The authors do not assume a complete summary of all techniques or all possible levigating agents.

Lanolin, liquid petrolatum, castor oil, glycerin, propylene glycol, and polyethylene glycol 400 monostearate were employed as levigating agents in this study. This group includes the levigating agents commonly employed in the preparation of official ointments as well as the two newer agents, propylene glycol and polyethylene glycol 400 monostearate. These two substances are included in this study because of their chemical inertness, physical property of lubricity, as well as their ready miscibility with the medicinal substances under consideration.

The miscibility of each medicinal substance with the various levigating agents was determined by mixing them in a test tube (see Table I) and also by mechanically incorporating them in a mortar and pestle. Solubility, alone, is not the determining factor for the efficacy of a specific levigating agent—the factor of compatibility of the agent with the ointment base also must be considered.

Castor oil is the only vegetable oil included throughout the study because of its long-standing reputation as an efficient levigating agent when ointments containing Peruvian balsam are prepared. Cottonseed oil and olive oil were included in the miscibility tests (test tube) but were not used in subsequent studies because they presented no advantages over castor oil or other levigating agents.

Lanolin is the levigating agent most frequently employed in official ointments. Some dermatologists call lanolin a "hidden" ingredient, even though it is listed as a constituent of the base in U. S. P. formulas.[1] They object to the use of lanolin in any ointment because they believe that it sensitizes some patients. Many other dermatologists find no objections to lanolin and have found no evidence to substantiate the charges of sensitization. Therefore, the pharmacist

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† Professor in Pharmacy, College of Pharmacy, State University of Iowa.

TABLE I

Miscibility of Certain Levigating Agents with Commonly Used Ointment Medicinals

Levigating Agents	Medicinal Substances			
	Ichthammol	Peruvian Balsam	Sulfur	Phenol
Lanolin*	Suspended	Insoluble	Suspended	Soluble
Glycerin	Soluble	Insoluble	Suspended	Soluble
Liquid petrolatum	Suspended	Insoluble	Insoluble	Insoluble
Castor oil	Soluble	Suspended	Suspended	Suspended
Propylene glycol	Suspended	Suspended	Insoluble	Suspended
Polyethylene glycol 400 monostearate*	Soluble	Soluble	Insoluble	Suspended
Cottonseed oil	Suspended	Insoluble	Suspended	Insoluble
Olive oil	Suspended	Insoluble	Suspended	Insoluble

* Warmed to liquid state.

should consult with the dermatologists for whom prescription work is being done and a general method of ointment preparation should be agreed upon.

The official ointments were reviewed using the levigating agents recommended by the U. S. P. XIII and the N. F. VIII. A standard technique was developed to evaluate the efficiency of one levigating agent over that of another. All ointments were prepared by mechanical incorporation with a mortar and pestle using the following procedure:

(1) Active ingredients were levigated with the levigating agent.

(2) A small portion of the base was added to the above concentrate.

(3) The remainder of the base was added.

In preparing the control for each group of ointments the number of rotations of the pestle required for each step was determined and this technique followed for the remaining ointments in the series. Six ointments were prepared in each series using the various levigating agents under consideration. In each series special attention was given to the miscibility of the medicinal agent and the levigating agent, the ease of incorporation of the levigating agent with the base, and the appearance of the finished product. Each ointment was coded on the following scale:

A—Superior: Excellent in appearance, levigation and incorporation accomplished rapidly and easily.

B—Good: Good preparation, differs in ease and length of time required for levigation and incorporation.

C—Fair: Possesses good levigating properties but presents incorporation difficulties, finished product of uniform consistency.

D—Poor: Incompatibility with levigating agent, no particular incorporation difficulties, product nonhomogeneous.

Peruvian Balsam Ointments

Basic Formula: Peruvian Balsam... 5%
Levigating Agent... 5%
White Ointment....90%

Control: Prepared with 5% of white ointment as levigating agent.

Notes on levigation (Classified according to levigating agent employed):

1—Control: B.
2—Lanolin: D—balsam not miscible with lanolin
3—Liquid Petrolatum: D—balsam not miscible with liquid petrolatum.
4—Polyethylene Glycol 400 Monostearate: A.
5—Castor Oil: A.
6—Propylene Glycol: C.
7—Glycerin: B.

Recommendations: From the standpoint of appearance and ease of incorporation castor oil or polyethylene glycol 400 monostearate is preferred as the levigating agent for Peruvian balsam ointments.

Sulfur Ointments

Basic Formula: Sulfur.....15%
Levigating Agent...10%
White Ointment....75%

Control: U. S. P. XIII Sulfur Ointment containing 7% of lanolin as the levigating agent.

Notes on levigation (classified according to levigating agent employed):

1—Control: C.
2—Lanolin (10%): A.
3—Liquid Petrolatum: D—sulfur immiscible with the liquid petrolatum.
4—Polyethylene Glycol 400 Monostearate: C.
5—Propylene Glycol: C.
6—Glycerin: B.

Recommendations: Because of the ease of incorporation and the production of a homogeneous ointment, 10% of lanolin is the desired levigating agent for use in preparing sulfur oint-

ments. While this may not be the most rapid method of preparation, the resulting product is the most desirable one of this series.

Comments: If there is an objection to the use of lanolin, glycerin is then the most desirable levigating agent to use. In preparing sulfur ointments the slab method is preferred to the mortar and pestle method because a more homogeneous dispersion of the sulfur can be obtained.

ICHTHAMMOL OINTMENTS

Basic Formula: Ichthammol.....10%
Levigating Agent...10%
White Ointment....80%

Control: N. F. VIII Ichthammol Ointment containing 10% of lanolin as the levigating agent.

Notes on levigation (Classified according to levigating agent employed):

1—Control: B.
2—Liquid Petrolatum: B.
3—Polyethylene Glycol 400 Monostearate: A.
4—Castor Oil: B.
5—Propylene Glycol: C.
6—Glycerin: B.

Recommendations: Because of the ease of levigation and the rapidity of incorporation, polyethylene glycol 400 monostearate is the preferred levigating agent when ointments containing ichthammol are to be prepared.

PHENOL OINTMENTS

Basic Formula: Phenol..... 2%
Levigating Agent... 2%
White Ointment....96%

Control: U. S. P. XIII Phenol Ointment which contains 2% of glycerin as the levigating agent.

Notes on levigation (Classified according to levigating agent employed):

1—Control: A.
2—Lanolin: D—phenol not soluble in lanolin by levigation.
3—Liquid Petrolatum: D-phenol insoluble in liquid petolatum.
4—Castor Oil: B.
5—Polyethylene Glycol 400 Monostearate: B.
6—Propylene Glycol: C.

Recommendations: None of the levigating agents studied presented any advantages over the official method, thus when a phenol ointment is prescribed it is recommended that the U. S. P. XIII method of preparation be employed.

Incorporation Difficulties

Incorporation difficulties were encountered whenever propylene glycol was used as the levigating agent. The medicinal substance being incorporated appeared to be more readily miscible with the base than with the propylene glycol. Thus in order to get a good, homogeneous product the two substances must be incorporated separately. From these results it may be concluded that propylene glycol is not a desirable levigating agent for use in incorporating these medicinal substances into the bases under consideration.

Ointments of Peruvian balsam 5%, sulfur 15%, ichthammol 10% and phenol 2% were prepared using Hydrophilic Petrolatum U. S. P. XIII and Hydrophilic Ointment U. S. P. XIII as bases. These ointments were prepared without the use of a levigating agent other than the bases themselves. In most cases the ointments were easily prepared and excellent products were obtained. Sulfur in Hydrophilic Petrolatum produced the only exception. In preparing this ointment it is desirable to use 10% of lanolin as the levigating agent to obtain a product of uniform consistency. Because of the ease of incorporation Peruvian balsam and ichthammol are particularly recommended for use in Hydrophilic Petrolatum and Hydrophilic Ointment.

The ease of incorporation without the use of levigating agents and the quality of the ointments obtained using Hydrophilic Ointment U. S. P. XIII as a base, indicate the desirability of employing such a vehicle whenever possible. Since the use of lanolin, or any other levigating agent, is completely eliminated, it is particularly desirable to employ this base when there is objection to the inclusion of lanolin as the levigating agent in a specific formula. A much more satisfactory product can be obtained from the standpoint of both the pharmacist and the dermatologist when Hydrophilic Ointment U. S. P. XIII is employed as a base.

Incorporation studies were undertaken on U. S. P. XIII Coal Tar Ointment to verify the reason for the color variations obtained when the preparation is made by different pharmacists. The grade and original color of the coal tar employed effects the degree of color variation in any method of incorporation. This has been substantiated

by Berman[2] and others. Three incorporation methods were used:

(1) Zinc oxide, starch and coal tar, respectively, were incorporated into the base (U. S. P. XIII method). A gray ointment of uniform consistency is obtained.

(2) Coal tar and zinc oxide mixed thoroughly and incorporated into the base, the starch added, and finally the remainder of the base. A brown to black ointment is obtained depending upon the grade of coal tar used. The product obtained is not of uniform consistency and is gritty when applied to the skin.

(3) Coal tar, zinc oxide and starch, respectively, were incorporated into the base. A greenish gray preparation of uniform consistency is obtained.

In a similar study on coal-tar ointments, Downing, Ohmart and DiCicco[3] report no significant difference in the relative therapeutic merits of black and gray coal-tar ointments as determined by clinical investigations. It is evident that the variations in color obtained in coal-tar ointments are due to (1) the incorporation technique employed by the pharmacist preparing the ointment, and (2) the color and consistency of the coal tar employed. It is recommended that pharmacists employ the U. S. P. XIII method in preparing coal-tar ointments in order to get uniform preparations. Some dermatologists may prefer that coal-tar ointments be a color other than that obtained by the official procedure. Again this difficulty can be overcome by consultation with the dermatologist and determining his preferences.

Incorporation studies were also made with coal tar in Hydrophilic Ointment U. S. P. XIII. Coal tar is readily incorporated into this base producing an excellent preparation of uniform consistency. The use of this base is recommended, whenever possible, for the preparation of coal-tar ointments. It eliminates the variations in color and produces a superior ointment from the standpoint of ease of incorporation, appearance, efficacy, ease of removal from the skin, and it also permits a reduction in the concentration of active ingredient.

It has been brought to our attention that Hydrophilic Ointment U. S. P. XIII softens upon levigation when used as a base in preparing ointments. When coal tar was incorporated into Hydrophilic Ointment a slight softening of the base was noted upon levigation of the coal tar and the base; however, after standing for a short time the preparation again assumed its original consistency and was stable to heat tests (41° C.). Further studies were conducted in an attempt to overcome this softening property.

Cetyl alcohol, in various percentages, was substituted for a portion of the stearyl alcohol in the Hydrophilic Ointment formula. The addition of 2% of cetyl alcohol was sufficient to produce a base which did not soften upon levigation. Coal tar was incorporated with the base containing cetyl alcohol and the product was tested for heat stability. The coal tar separated from the base in twenty-four hours at 41° C. To determine the reason for this instability a series of heat tests were conducted on (1) coal tar fused with cetyl alcohol; (2) coal tar fused with stearyl alcohol; (3) phenol fused with cetyl alcohol; (4) phenol fused with stearyl alcohol. Both coal tar and phenol with the cetyl alcohol liquefied in twenty-four hours at 41° C. Stearyl alcohol with coal tar and phenol exhibited satisfactory heat stability. From these results it was concluded that the phenolic constituents of the coal tar are incompatible with cetyl alcohol and were partially responsible for the instability to heat noted when coal-tar ointment was prepared from the base containing cetyl alcohol.

Next propylene glycol was substituted for the glycerin in the Hydrophilic Ointment formula. This base did not soften upon levigation. When coal tar was incorporated into the base containing propylene glycol an excellent preparation was obtained which was stable to heat tests (41° C.).

On the basis of this study it is recommended that propylene glycol be substituted for the glycerin in the U. S. P. XIII Hydrophilic Ointment formula.

CONCLUSIONS

From this study the following recommendations are made:

1—For incorporation with White Ointment, Peruvian Balsam be levigated with either castor oil or polyethylene glycol 400 monostearate.

2—Sulfur Ointment be prepared using 10%

(Concluded on Page 256)

WHAT'S HAPPENING IN THE MEDICAL CARE FIELD

AMA Program and Other Plans under Discussion

THIS is the third in a series of articles which have been prepared to keep pharmacists informed on what is happening in the national planning for medical care. The first article dealt with existing and proposed medical care programs of the Federal Government and others. The second discussed the British health program with special reference to its pharmaceutical phases. Major developments taking place during the past two months are reported in this issue.

During this period the American Medical Association announced a 12-point program. President Truman stated that he would deliver a message to Congress on medical care. (This was in course of preparation as THIS JOURNAL went to press.) Dr. Paul B. Magnuson, Chief Medical Director of the Veterans Administration, acting "as a private individual," suggested a plan for reducing the cost of medical care and for bringing about a more widespread use of the Nation's top medical skills. Various other "middle course" proposals were made, including two which would give medical and hospital care to the "medically indigent" through Blue Cross and Blue Shield.

No specific "pharmaceutical phases" are contained in any of the above developments. For example, the AMA proposal does not discuss medicines, nor does it mention pharmacy, and the same is true of the other plans.

Lodge Bill

The only proposal dealing specifically with the provision of drugs and medical supplies is a bill (S.1106) now before Congress introduced by Senator Henry Cabot Lodge of Massachusetts.

Under S.1106, the same bill which Senator Lodge introduced in the last Congress, the Federal Government would assist the States in furnishing expensive medicine and medical appliances to the indigent and the medically indigent.

The bill would make available "free to such persons as may require them, X-ray services, laboratory diagnostic services, respirators, and any drug which is of substantial, accepted, and specific value in the treatment or prevention of pneumonia, streptococcus infection, diabetes, pernicious anemia and other anemias, congestive heart failure, glandular and nervous disorders, nutritional deficiency, typhoid fever, and such other infectious or chronic diseases as the Surgeon General may from time to time prescribe."

Although no specific drugs are mentioned in the bill, Senator Lodge stated when he introduced it in February, 1947,[1] that the medicines covered were: Sulfa drugs, insulin, liver extract, mercury diuretics, endocrine products, vitamin preparations, typhoid vaccine, penicillin and streptomycin.

Under this bill, the Federal Government would pay to each State which had a plan for medical aid approved by the Surgeon General, one-half of the sums spent under such a plan.

The AMA 12-Point Program

On February 19, the *Journal of the American Medical Association* presented a 12-point program for the advancement of medicine and public health which would rely on the expansion of voluntary hospital and medical care plans and on local administration and control of expanded public health activities. The AMA recommends promotion of medical research through a National Science Foundation, however, and financial assistance for medical, dental and nursing schools "and other institutions necessary for the

training of specialized personnel required in the promotion and distribution of medical care." Pharmacists also will be interested in the recommendation for providing care for the veteran "in his own community by a physician of his own choice," because this would mean an extension of the present home-town pharmacy plan for veterans.

The 12-point program follows:

A Federal Department of Health

1. Creation of a Federal Department of Health of Cabinet Status with a Secretary who is a Doctor of Medicine, and the coordination and integration of all Federal health activities under this Department, except for the military activities of the medical services of the armed forces.

Medical Research

2. Promotion of medical research through a National Science Foundation with grants to private institutions which have facilities and personnel sufficient to carry on qualified research.

Voluntary Insurance

3. Further development and wider coverage by voluntary hospital and medical care plans to meet the costs of illness, with extension as rapidly as possible into rural areas. Aid through the States to the indigent and medically indigent by the utilization of voluntary hospital and medical care plans with local administration and local determination of needs.

Medical Care Authority with Consumer Representation

4. Establishment in each State of a medical care authority to receive and administer funds with proper representation of medical and consumer interest.

New Facilities

5. Encouragement of prompt development of diagnostic facilities, health centers and hospital services, locally originated, for rural and other areas in which the need can be shown and with local administration and control as provided by the National Hospital Survey and Construction Act or by suitable private agencies.

Public Health

6. Establishment of local public health units and services and incorporation in health centers and local public health units of such services as communicable disease control, vital statistics, environmental sanitation, control of venereal diseases, maternal and child hygiene and public health laboratory services. Remuneration of health officials commensurate with their responsibility.

Mental Hygiene

7. The development of a program of mental hygiene with aid to mental hygiene clinics in suitable areas.

Health Education

8. Health education programs administered through suitable state and local health and medical agencies to inform the people of the available facilities and of their own responsibilities in health care.

Chronic Diseases of the Aged

9. Provisions of facilities for care and rehabilitation of the aged and those with chronic disease and various other groups not covered by existing proposals.

Veterans' Medical Care

10. Integration of veterans' medical care and hospital facilities with other medical care and hospital programs and with the maintenance of high standards of medical care, including care of the veteran in his own community by a physician of his own choice.

Industrial Medicine

11. Greater emphasis on the program of industrial medicine, with increased safeguards against industrial hazards and prevention of accidents occurring on the highway, home and on the farm.

Medical Education and Personnel

12. Adequate support with funds free from political control, domination and regulation of the medical, dental and nursing schools and other institutions necessary for the training of specialized personnel required in the provision and distribution of medical care.

AMA Policy of Action

The AMA policy of action on this program is discussed by Dr. Elmer L. Henderson, Chairman of the Board of Trustees, in the March 19 issue of the *Journal of the AMA*. The AMA, he said, would like to see the full reports of the National Health Assembly, held last May, made available for discussion. "The American Medical Association is ready to assume leadership in carrying out the recommendations of all of the sections which do not disagree with the fundamental policies established by the House of Delegates of the American Medical Association. Apparently the one point of issue remains the question of compulsory sickness insurance."

Dr. Henderson said that the AMA Board of Trustees thinks it would be impractical to

assemble another health conference until there has been time for discussion of the reports of the 1948 National Health Assembly. Nevertheless, he added that the AMA "is prepared at the proper time not only to continue conferences already instituted but to call conferences with ..... consumer groups and to do whatever else is necessary to assure a better distribution of the high quality of medical care now existing in the United States."

Middle Course Proposals

A number of proposals have been made recently which would ask the Federal Government to play a larger role than is suggested by the AMA, but would not establish compulsory health insurance.

Blue Cross Plan for Indigent Care

Proposals to give necessary medical and hospital care to the "medically indigent" through the Blue Cross—Blue Shield Plans were made by Dr. Paul R. Hawley, who heads these Plans, and by Dr. G. C. Engel, President of the Medical Society of Pennsylvania.

Dr. Engel would enroll such people in Blue Cross and Blue Shield with the Government paying all or part of the dues. On February 15th, he reported that the Presidents of 39 State medical societies had expressed approval of his plan which also contained other proposals similar to those in the AMA program.[2]

Dr. Hawley proposed in a letter to Senator Lodge[3] that Blue Cross and Blue Shield cards be given to people who were not good insurance risks—for example, those with chronic heart disease. The cards would entitle them to subscribers' benefits and the Plans would pay the bills of their physician or hospital. However, the proper welfare agency would pay the Plans for these bills plus a small percent to cover administrative costs. He also proposed that the Federal Government should offer subsidies to the States so that the low-income States would be able to give the same services as the wealthy States.

The pharmacist will want to know whether such a program would mean that more people could buy necessary medicines. Apparently it would in the case of the hospital care plans. All the existing hospital care plans provide for some drugs. A majority of the plans provide all drugs that may be prescribed by the physician while the patient is in the hospital. Most of the remaining plans provide "ordinary" or "routine" medications which generally mean all drugs that the hospital is equipped to provide from its pharmacy except for a few expensive drugs. However, most of the medical care plans do not at present include the cost of drugs in their home care coverage. In fact, very few of the plans include the cost of home calls for the physician.[4]

Dr. Magnuson's Plan

Dr. Paul B. Magnuson, Chief Medical Director of the Veterans Administration, acting "as a private individual" has prepared a plan for nation-wide medical care[5] which would establish a network of Clinics, through local initiative, to provide on a pay-what-you-can-afford basis the thorough diagnostic examinations which are now so expensive. Treatment, however, would be left to private physicians and local hospitals.

Medicines are not mentioned in Dr. Magnuson's plan, but presumably pharmacists would continue to supply them as they now do. The Diagnostic Clinic would probably pay pharmacists for their services to people unable to pay, since Dr. Magnuson would have the Clinic pay the family physician, the specialist and the local hospital, "for services rendered to those members of the community who cannot afford to pay for medical treatment." And he would have the Clinic "make up the deficit for those patients who can afford to pay part of the costs for both hospital and diagnostic service."

These Diagnostic Clinics, said Dr. Magnuson, should be accessible to everyone; they should be on a travelling basis, if necessary, in sparsely settled regions. New buildings would be necessary only where existing ones cannot be used. The Clinics should be equipped with the most modern equipment, and staffed by the medical schools with the highest type of personnel. Supervision of the plan and standards of service should be under the local medical school. In states where there are several medical schools, a committee of Deans would supervise the plan, as is now successfully done in the Veterans' Administration medical program.

The VA could cooperate by encouraging its young resident doctors to complete their

training as specialists in Diagnostic Clinics under the supervision of outstanding medical consultants. Doctors whose education was aided by the National Science Foundation could pay back their debt by serving in outlying Clinics.

Dr. Magnuson pointed out that his plan would make efficient use of medical manpower. The Armed Forces could use the Clinics where they had none of their own, and the VA could send their non-service connected cases there for examination. These cases, who make up two-thirds of VA patients, now have to use a bed in a VA hospital to get a complete diagnosis.

Under Dr. Magnuson's plan the Clinics would provide free, part-pay or full-pay examination and advice to all seeking such service. The charge would be adjusted to the economic status of the patient, by a local board which would also decide on his need for deficit payments to help with the costs of treatment.

Under this plan, he said, the Federal Government would pay roughly half the cost of medical care in the country as it now does (through VA and other Federal hospitals and through medical assistance to States and municipalities), and the rest would come from State and local governments, foundations, voluntary insurance plans, and payments by patients.

In summing up the reasons for his middle course program, Dr. Magnuson said that the proper kind of diagnostic service is not now available to many millions of Americans—especially those in the low and middle income groups, and in rural areas where the doctor is not equipped to provide it. "A thorough diagnosis is expensive because it takes time, skill, materials, housing and the cooperative effort of specialists. Laboratory work for X-rays, blood chemistry, basal metabolism tests, etc., may run upwards of $150 per case."

He therefore opposes a do-nothing policy. However, a compulsory health insurance scheme, according to Dr. Magnuson, would lead to "accumulation of bureaucracies in Washington" which would weaken individual self-reliance, would create an unpredictable tax burden, and would have results "poor in terms of the care given the individual and poor in terms of the progress made in medical research."

Accordingly, Dr. Magnuson suggested his plan which he believes would build on existing customs and institutions and have the cooperation of doctors and other health personnel, and which would prevent the abuses and reduce the costs of a government system of medical care. He said that he hoped that his plan—which could largely be put into effect within 18 months—could be drafted into a bill with bipartisan backing.

REFERENCES

1. *Congressional Record*, Feb. 24, 1947.
2. *Hospitals*, 23, No. 3, 104–105 (1949); *Washington Report on the Medical Sciences*, Jan. 31 and Feb. 21, 1949.
3. *Congressional Record*, Feb. 7, 1949, pp. 860–861.
4. Reed, Louis S., *Blue Cross and Medical Service Plans*, Washington, Federal Security Agency, 1947, pp. 36, 155–165.
5. THIS JOURNAL has obtained a copy of the plan which Dr. Magnuson first discussed publicly in an interview with the *New York Times* (Feb. 24, 1949).

CHEMICAL TEST DEVELOPED FOR THE COMMON COLD

A chemical test for recognizing the virus producing the common cold has just been announced by Drs. Leon T. Atlas and George A. Hottle of the Laboratory of Infectious Diseases, National Institute of Health.

Research with viruses producing diseases only in human hosts has been handicapped by the lack of a laboratory method for demonstrating the presence or absence of and the amount of viruses. The onset of typical disease symptoms in human volunteers following experimental inoculation often has been the only manner of detecting the virus.

Since the only two components common to all virus thus far are protein and nucleic acid, these workers sought to develop tests for the presence of these components. It was soon found that the detection or determination of proteins was not sufficiently specific and so attention was focused on tests for nucleic acid.

Although a number of tests for nucleic acid were tried, a color test based on the reaction of tryptophane and perchloric acid were most advantageous.

Reading of the resulting color in a spectrophotometer at 500 mμ gave results which could be correlated with the production of colds in human volunteers.

Studies are now under way to determine whether the substance responsible for the color formation is a virus constituent or some by-product of infection in the test fluid.

It is expected that this test will enable scientists to unravel many mysteries of the common cold heretofore impossible because of the necessity for using large numbers of human volunteers.

—*Science*, 108, 743, Dec. 31, 1948

PEPPERMINT AND SPEARMINT SPIRITS

Suggested Changes for Shortening Official Procedures

by **LESLIE M. OHMART***

IN THE preparation of Peppermint Spirit and Spearmint Spirit, the United States Pharmacopoeia directs that the respective plant materials be macerated with water for one hour and then strongly expressed. The moist plant material is then macerated with alcohol for a period of six hours. The purpose of the maceration with water is to remove the brown coloring matter which, if not moved, would impart an undesired color to the finished preparation. The purpose of the maceration with alcohol is to extract the chlorophyll from the plant material, thus producing the clear, dark green color desired.

While the length of time involved in preparing either of these spirits may be of no particular disadvantage in the pharmacy or manufacturing plant, it is of disadvantage when Peppermint Spirit and Spearmint Spirit are prepared in the college laboratory (since laboratory periods seldom are as long as the seven hours required for the official procedure).

In an attempt to discover whether the six-hour maceration period specified by the Pharmacopoeia was actually necessary to extract satisfactorily the chlorophyll from peppermint and spearmint, the following investigation was undertaken.

Experimental

Six samples of Peppermint Spirit were prepared by the official method except that the alcoholic maceration periods were, respectively, one, two, three, four, five and six hours. The colors of the samples were compared with a Duboscq colorimeter, using the six-hour sample as a standard. The results obtained are shown in the table which follows (next column).

Peppermint Spirit

Sample	*Reading* (*mm.*)	*Color Intensity* (%)
1 (1 hour)	20.0 / 24.8	80.6
2 (2 hours)	20.0 / 22.9	87.3
3 (3 hours)	20.0 / 22.1	90.5
4 (4 hours)	20.0 / 21.1	94.6
5 (5 hours)	20.0 / 20.8	96.1
6 (6 hours) *standard*	20.0 / 20.0	100.0

Six Erlenmeyer flasks, containing the six samples, were arranged haphazardly. Several observers could detect no difference in color intensity and were unable to rearrange the flasks on the basis of maceration time.

Six samples of Spearmint Spirit were prepared by the official method except that the alcoholic maceration periods were, respectively, one, two, three, four, five and six hours. The colors of the samples were compared with a Duboscq colorimeter, using the six-hour sample as a standard. The results obtained are shown in the table which follows.

Spearmint Spirit

Sample	*Reading* (*mm.*)	*Color Intensity* (%)
1 (1 hour)	20.0 / 22.4	89.3
2 (2 hours)	20.0 / 21.9	91.3
3 (3 hours)	20.0 / 21.6	92.6
4 (4 hours)	20.0 / 21.3	93.9
5 (5 hours)	20.0 / 21.1	94.6
6 (6 hours) *standard*	20.0 / 20.0	100.0

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Presented to the Section on Practical Pharmacy, AMERICAN PHARMACEUTICAL ASSOCIATION, 1947 meeting, Milwaukee.

Six Erlenmeyer flasks, containing the six samples, were arranged haphazardly. Several observers could detect no difference in the color intensity and were unable to rearrange the flasks on the basis of maceration time.

Conclusions

In the preparation of Peppermint Spirit and Spearmint Spirit, the length of the period of maceration with alcohol may be reduced materially without significantly affecting the intensity of color of the finished product. From the results obtained with the Duboscq colorimeter, it would appear that a maceration time of one or two hours is sufficiently long to accomplish the objective of the maceration.

Since the six-hour maceration time now required by the Pharmacopoeia seems to have been chosen arbitrarily, it is recommended that the Committee of Revision consider the desirability of amending the official monographs of Peppermint Spirit and Spearmint Spirit by reducing the time specified for the maceration of the plant material with alcohol.

Summary

1. An investigation was undertaken to determine if the extraction of chlorophyll from peppermint and spearmint, in the preparation of the respective spirits, could be satisfactorily accomplished in less than the six hours specified in the official monographs.

2. The result of the investigation indicate that a maceration period of from one to two hours is sufficiently long to achieve satisfactory extraction of the cholorphyll.

PHARMACISTS WARNED REGARDING THE POSSIBILITY OF PHENOL POISONING THROUGH EXTERNAL APPLICATION

State Boards of Pharmacy and State Pharmaceutical Associations were urged this week to alert pharmacists and physicians to the possibility of phenol poisoning through external application of this drug. The warning was contained in a special bulletin which the AMERICAN PHARMACEUTICAL ASSOCIATION issued to all State Boards of Pharmacy and State Pharmaceutical Associations. Full text of the bulletin is reproduced below.

Our attention has been called to an article in the *Journal of the American Medical Association* for March 19, 1949, entitled "Death Due to Phenol Contained in Foille." It appears from this article that a product known as "Foille Emulsion," manufactured by the Carbisulphoil Company of Dallas, Texas, was applied externally in the treatment of first and second degree burns and apparently so much of the material was used that the amount of phenol absorbed caused death.

This product has since been recalled from the market because it apparently did not bear a warning on its label regarding the possibility of phenol poisoning from its application.

We direct your attention to the following warning regarding phenol, issued by the Food and Drug Administration some time ago in its "Memorandum on Warning Statements," under Section 502 (f) (2) of the Federal Food, Drug and Cosmetic Act. This warning is still effective;

> ***"Carbolic acid in preparations for external applications:*** Note: Products containing more than 2% of carbolic acid are not considered safe for indiscriminate distribution.
>
> "Warning: When applied to fingers and toes, do not use a bandage.
>
> "Apply according to directions for use, and in no case to large areas of the body."

The Food and Drug Administration has also issued the following specific ruling:

> ***"Phenol***—Articles containing 1% or less of phenol need no warnings; products containing more than 1% but not more than 2% must bear warnings against application to large areas and that bandages should not be used when the product is applied to fingers and toes; products containing over 2% phenol are usually not safe for indiscriminate distribution. TC-413, February 24, 1944."

The recall of this product and the death apparently due to its improperly controlled application emphasize the importance of alerting pharmacists and physicians once more to the danger from the application of external preparations containing phenol. All products containing phenol should be labeled in accordance with the suggestion quoted above and pharmacists should add whatever precautionary measures seem indicated to properly protect users of such products against possible harm.

TRENDS IN PHARMACOLOGY

by CHAUNCEY D. LEAKE*

It has been demonstrated frequently that knowledge of fundamental principles is of the utmost importance to the practicing pharmacist. It is for this reason that we are publishing this condensation of a significant review on current pharmacology by Dr. Chauncey D. Leake of the University of Texas. Readers who are interested in reading the original article will find it in the Journal of the American Medical Association, 138, 730, Nov. 6, 1948.

IN SPITE of the great number of new drugs being introduced into medicine for various purposes, the most important development in pharmacology is theoretical, in connection with the establishment of general principles. Knowledge of the general principles of pharmacology aids in the choice by the physician and most efficient use of chemicals (drugs) appropriate for the particular clinical situation. It is of practical help in judging the use of drugs to understand the factors involved in the intensity of drug action, to know something of the general principles of dose-effect and time-concentration relationships and to realize something of the mechanism of drug action.

It is necessary to differentiate the study of the action of drugs from the proposition of the practical use of drugs in medicine. The process of acquiring verifiable and agreed-on knowledge of the action of chemicals on living things is a scientific matter. The application of this knowledge to the benefit of a particular sick patient is an artistic venture, calling for the exercise of judgment, discrimination and choice.

The main criteria for the choice of a drug for a particular purpose are low toxicity, desired activity, prompt effect, easily controlled effect, no untoward reactions, even on frequently repeated administration, and ease of administration and manufacture.

In order to be certain of uniformity of response to the same dose of a drug it is necessary that the drug be standardized. When the active principles of crude drugs were isolated in chemically pure form, a great advance was possible in standardization, since now the crystalline material could be made to conform to specific chemical standards making possible a more precise relationship between dosage and effect.

When new drugs are developed for medical use, there is a systematic way of appraising their value. This should begin with an exhaustive study of toxicity on single and repeated dose. All phases of possible toxic action should be analyzed and described for the benefit of the physician. There should then be offered full information on rates and ways of absorption into the body. What happens to the drug in the body should be studied and described. The physicians should be informed regarding the rate of detoxification and the rate and mode of excretion. General and special pharmacologic properties should be described in detail. This information should be offered in comparison with related and commonly used chemicals offered for the same purpose. The physician is then in a reasonable position to judge for himself what may be the best drug, in a series of related compounds, for the particular purpose he has in mind. It is this sort of evidence that the physician should insist on receiving from commercial pharmaceutic concerns. He should be offered more straight information regarding what a drug does and how it acts than perusasive suggestions for what clinical conditions to use it. The physician's judgment should tell him for what purposes to use a drug. It is not the function of commercial pharmaceutic con-

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cerns to tell a physician how to practice medicine. It is their responsibility, however, to give the physician, as well as the pharmacist, full scientific information regarding the drug they are interested in promoting.

When a drug has been thoroughly studied in a scientific manner, it may be ready for controlled clinical evaluation. In this it is essential to take into account the natural history of the particular diseased condition in which it is proposed to study the drug. The clinical investigator must estimate the healing power of nature in respect to the particular disease with which he is dealing. He must also beware of the logical fallacy of confusing sequence of events with cause and effect. If there is sound clinical evidence to support the scientific background of the drug, there may be justification for its being offered to physicians for general clinical use. But physicians should insist always on having this information, and they should then appraise for themselves the evidence regarding the drug.

Factors Modifying Drug Action

The chief factors modifying drug action are dosage, the ratio of the rate of absorption of the drug through the body to the rate of its destruction or excretion, the physical-chemical properties of the drug and the individual peculiarities of the particular patient to whom the drug is given.

By dosage is meant mass of chemical per mass of body tissue excluding fat. This suggests the importance of dosage on the basis of mg. of drug per Kg. of body weight. Many of the newer drugs are being introduced for use in this manner. Drugs with a more general and less toxic action may be given by "average dose," but for precise drug use it is wise to work out dosage in terms of mg. per Kg. or in terms of millimol equivalents.

The mode of administration profoundly modifies dose effects. This is because the mode of administration is important in the rate of absorption of the drug. It is practically helpful for the physician to study techniques of medication, in order to obtain the most satisfactory results with patients. Absorption is slowest, of course, through the skin. It is next most rapid through the mucous membranes of the alimentary tract. It is important to remember the rectum as an absorbing area when it may be difficult to get satisfactory administration by mouth. Absorption of gaseous agents across the respiratory mucous membrane is very rapid. Intramuscular injection offers steady absorption for drugs in oil suspension. Parenteral administration, of course, requires aseptic precautions. Subcutaneous injection is not a particularly satisfactory method of administering drugs, but it is widely used. The most rapid distribution is obtained when a drug is given by vein. Sometimes a drug may be given into the spinal canal for particular local effects there. It is wise to remember that drugs may be absorbed from the mucous membranes of the vaginal tract, the ear or the eye. Sometimes a drug given only for local effect at the point of application may be absorbed and produce a systemic reaction.

It is helpful to know something about the rate of drug destruction or excretion. This gives the clue to the important problem of how frequently to repeat administration Many drugs, such as penicillin or the sulfonamide compounds, are rapidly excreted in the urine and require frequent administration in order to maintain the concentration necessary for effectiveness. Many drugs are detoxified by combining with amino acids in the body. When this is possible, allergic effects may occur from the drug. Drugs such as aspirin, amidopyrine, the sulfonamide compounds, local anesthetics and aniline derivatives may combine readily with amino acids and produce allergic effects. A physician cannot tell which patient may show the allergic reaction or where, but he should be prepared to expect such reactions in at least 5% of patients given such drugs.

Strenous efforts are being made to delay the excretion of penicillin (by giving such agents as caronamide) or to decrease the rate of absorption (by use of procaine conjugates in oil), so as to prolong the effective concentration. When we know more about the chemical makeup of penicillin we may be able to devise chemical relatives which will be more slowly excreted and so give a more lasting effect.

The physical chemical properties of drugs are important with respect to their action in the body. If the drug is more soluble in oily material than in water, it will tend to concentrate in the oily parts of the body. Those of greatest functional importance are the elements of the nervous system. Thus, most drugs acting on the nervous system have a high oil-water solubility coefficient. The

redox potentials of drugs, as well as their polarity properties, are important in respect to their reaction with enzyme systems in cells. These are matters which will become increasingly significant as we learn more about them.

Peculiarities of Drug Reaction

Highly pertinent from the physician's standpoint is the estimation of the peculiarities of his individual patient with respect to drug reaction. Age, sex, metabolic state, constitutional factors and allergic tendencies must be appraised. Careful clinical judgment is required of the physician to evaluate those individual factors in his particular patient which may influence drug action. In general, the high metabolic rate of infants diminishes quickly to rise gradually to adolescence and to maintain a plateau until the fourth or fifth decade, when there is gradual decline. The estimation of metabolic status is a difficult clinical problem, but it is significant in connection with the activity of many different types of drugs. Some drugs, such as morphine, do not follow ordinary rules regarding age effects. Infants and old persons in general are more sensitive to morphine than persons in the prime of life.

It is particularly important to appraise the autonomic nervous balance. Some persons may be peculiarly sensitive to sympathetic drugs, while others may show a higher sensitivity with respect to drugs acting on the parasympathetic system. Most important is the proposition of appraising allergic tendencies in a patient. This should always be investigated in order to avoid, if possible, allergic or other untoward reactions to drugs which may produce such undesired effects.

It must be remembered that different persons will respond differently to the same dose of the same drug. This factor of individual variation in response to drugs can roughly be represented by "distribution curves" in which increasing intensity of reaction to the same dose is indicated along the horizontal axis, while the vertical axis shows the number of persons grouped with regard to the same intensity of reaction. In general there will be some persons who will show a relatively small response. The great majority will show the "average effect." A small number of persons may show a particularly intense reaction from a dose that might produce no effect in the less sensitive person.

When results are accumulated with reference to all or no effect (as cure or death), the curve is S-shaped and shows the percentage of persons reacting, when arranged on the vertical axis, to increasing dosage on the horizontal axis. Such curves are particularly important in the quantitative estimation of toxicity and effectiveness.

Because of its ease of estimation under experimental conditions, the 50% point on the curve is usually taken as the standard of reference. Thus, ED_{50} refers to the 50% effective dose, that is, the dosage which will be effective, in the intensity desired, on 50% of the organisms to which the drug is administered. In the same way LD_{50} refers to the dosage at which 50% of the organisms to which the drug is administered may be expected to die. The ratio between the ED_{50} and the LD_{50} of a drug under standardized experimental conditions is sometimes referred to as the "safety index."

In applying this scientific knowledge, however, it is essential for the physician to remember that he is not interested in the dosage which will produce the desired effect in only 50% of his patients, and he is certainly not interested in the dosage which may kill 50% of his patients. The point is that the effective dose range of a drug may overlap the lethal range or the range of toxic reaction. This is the case, for example, with such drugs as emetine hydrochloride. Since the mechanisms of desired action and of death may be different, the "slopes" of the curves may differ and overlapping may occur readily. It is practically important to know the ratio between the dosage which might be expected to produce the desired effect in practically all patients to the dose that might produce an untoward reaction in the most sensitive patients.

Time-Concentration Relationships

Time is an unavoidable factor in the biologic response to drugs. For certain drugs, such as the inhalation anesthetics, the effective concentration for anesthesia, if maintained long enough, might produce untoward or lethal effects. One wishes, of course, to obtain a concentration which within a reasonable time will produce the desired effect, but which will not produce un-

desired effects even if maintained for a relatively long period of time.

Mechanisms of Drug Action

Historically it was not possible to approach the problem of the mechanisms of drug action until the advent of modern chemical theory and the subsequent isolation and identification of the active principles of crude drugs in pure crystalline form.

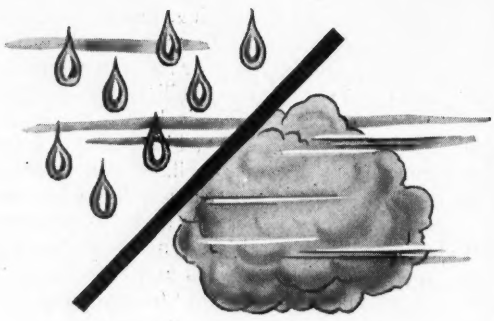
Francois Magendie (1783–1855) first studied the localization of the site of action of drugs. Oswald Schmiedeberg (1838–1921) inaugurated systematic studies on the fate of drugs in the body. After a succession of important discoveries in this field by such scientists as Claude Bernard, A. C. Brown, T. R. Fraser, Willstätter, Emil Fischer, Wieland, Fourneau, Karrer, Ruzicka, Stoll and others we arrive at the very productive English school composed of such eminent men as Sir Henry Dale, A. V. Hill, Trevan, Gaddum, Clark and Burn.

Recent studies on the mechanism of drug action have been directed toward the basic units concerned, which are molecules of drugs in relation to living cells. Clark, the pioneer in this area, called particular attention to the relatively small size of the molecules of a drug in comparison to the relatively large size of the cells on which they act. He pointed out that the large number of molecules of a drug, even in a small mass, would compensate for the difference in size. However, in many instances, as with cholinergic or adrenergic compounds, the number of molecules capable of producing an effect can be explained only on the basis of chemical reaction with a small active patch on the surface of the cell.

Drug action is at a molecular level and involves relations between molecules of drug and molecules of cell receptors. Thus, investigation of the molecular architecture of cells, including the organization of the various cell interfaces, becomes prerequisite to further clarification of the mechanism of drug action. Such study reveals the significance of short range (van der Waals) association forces in drug-receptor relationships. The chief chemical factors involved on hydrocarbon, polar and ionic groups, with spacing and stereochemical factors determining the resulting forces of association. These forces vary in geometric proportion to the distances between relevant groups, suggesting the sensitiveness of the association forces to the orientation of the molecules concerned. Slight changes in spacing, dipole charge or ionization may form or split an association complex, thus accounting for high specificity and rapid enzyme reversibility. Competition between related chemicals in regard to receptor complexes in cell interfaces or other molecularly organized cellular structures results in effects determined by mass law equilibriums. The approach to pharmacologic problems through a study of molecular architecture of cells and receptor complexes permits an attempt to apply quantum theory to pharmacologic mechanisms, which has already shown to be so promising in connection with various mutafacient agents.

Most of the current theories regarding the mechanism of drug action involve surface phenomena. These concern surface tension, polarity, template effects, blocking effects, "active patches" and a competitive effect involving essential metabolites in complicated enzyme systems.

In order to understand current theories of the mechanism of drug action, it is essential to know something about the surface organization of cells. According to the admirable summary by Davson and Danielli, the cell surface is composed of a double layer of oriented lipid molecules, with single flattened molecules of protein spread on the outside and inside. These protein molecules may have reactive chemical groupings exposed to the surface, to which various compounds in the intercellular fluid, including drugs, may attach. On the other hand, certain ions may pass between the protein molecules and get into the lipid layer and eventually into the inside of the cell. Other compounds in the intercellular fluid may disrupt the proteins on the surface, dissolve the fats in the lipid layer and thus profoundly alter the surface tension with resulting injury or rupture of the cell. Certain molecules attaching to the surface of the cell may block other essential molecules from reacting with the cell in ordinary metabolism, thus altering the activity of the cell. It is now known that many chemicals, such as the sulfonamide drugs, act by interfering with essential metabolites, particularly vitamins, through competition involving similarity of chemical structure. It is also now well established that many drugs, such as organometallic chemotherapeutic agents, act by disturbance of enzyme systems either on the surface of cells or inside cells.



CLOUDINESS IN LIQUID PETROLATUM SPRAYS

by JOSEPH B. SPROWLS*

WHILE oily sprays having a base of light liquid petrolatum have lost much of their popularity in recent years, solutions of various aromatic substances in liquid petrolatum are still encountered with sufficient frequency in prescription practice to warrant some interest. The purpose of this investigation was to study the cause of cloudiness in liquid petrolatum sprays containing combinations of volatile materials.

When combinations of substances such as chlorobutanol, menthol, camphor, ephedrine and others are dissolved in liquid petrolatum, the resulting product is frequently cloudy. But the degree of cloudiness is variable and seems to show some dependence upon the order of mixing.

For obvious reasons the presence of moisture would seem to be the most likely source of cloudiness. The cloudiness which results when hydrous ephedrine alkaloid is dissolved in liquid petrolatum has been well recognized[1] and is described in the pharmacopoeial monograph for Ephedrine.[2] However, the fact that the presence or absence of cloudiness seems to have some dependence upon the order of mixing suggests that factors other than water content may be involved. The statement is made in a popular textbook of dispensing pharmacy[3] that when combinations of substances which liquefy are dissolved in liquid petrolatum, cloudiness may develop if the substances are mixed together and allowed to liquefy before being dissolved but not if they are dissolved separately in the liquid petrolatum. This suggests the possibility that factors other than moisture may be involved. This study was designed to reveal the extent to which the presence of moisture influences the cloudiness of a liquid petrolatum spray.

Experimental Procedure

A number of substances commonly included in sprays were added to liquid petrolatum in the maximum concentration which would be commonly encountered in prescriptions intended for nasal use. The substances were dissolved separately and also in all possible simple combinations. The substances used together with the concentration which was employed in the study, are as follows: (a) Chlorobutanol, 2%; (2) menthol, 2%; (3) camphor, 2%; (4) phenol, 0.5%; (5) eucalyptol, 2%; (6) methyl salicylate, 1%; (7) thymol, 1%; (8) ephedrine, 1%; and (9) chloral hydrate, 2%.

In the first set of experiments all of the combinations (except those involving chloral hydrate) were dissolved in light liquid petrolatum using two methods:

METHOD A: First combining the solids and allowing them to liquefy (slight warming if necessary) followed by solution in light liquid petrolatum, using mild heat if necessary.

METHOD B: Dissolving separately in equal portions of light liquid petrolatum (using mild heat if necessary) and combining the solutions.

The ingredients used in this series were all of U. S. P. grade but had been subjected to usual conditions of storage and were taken from previously opened packages. The light

* Formerly Professor of Pharmacy, University of Buffalo; now Professor of Pharmacy, Temple University, Philadelphia. Assistance was given by Miss Esther L. Dewitz, a senior at the School of Pharmacy of the University of Buffalo.

liquid petrolatum (which was of the same lot used in subsequent experiments) had been deliberately exposed to air.

The extent of cloudiness in the resulting solutions was observed by visual means using a uniform source of fluorescent light. Cloudiness was arbitrarily rated as clear, slightly cloudy or very cloudy.

The following combinations of ingredients were found to produce cloudiness in the resulting spray in the concentration indicated above: Chlorobutanol-menthol, chlorobutanol-phenol, chlorobutanol-methyl salicylate, chlorobutanol-thymol, and menthol-camphor. Since the ephedrine and chloral hydrate showed cloudiness when dissolved separately in mineral oil, all solutions obtained with these substances were cloudy.

In almost every instance where cloudiness was observed, the cloudiness was more intense when METHOD A had been used than when the solution was prepared by METHOD B.

The experiments were then repeated using all combinations which had shown cloudiness in the previous experiment but using anhydrous mineral oil. In this set of experiments the same materials were used which had been utilized in the previous series, except that the light liquid petrolatum used had been dried by heating for 30 minutes at 110° C. All combinations which had shown cloudiness in the previous series were repeated. The results indicate a slight improvement in the degree of cloudiness.

The third series of solutions were prepared using materials which had been rendered anhydrous wherever possible by storing separately over fused calcium chloride.† The liquid petrolatum used had been rendered anhydrous by the method described above. It is notable that no combinations in this series produced any noticeable degree of cloudiness.

Finally, two special experiments were performed. In the first of these a sample of liquid petrolatum was deliberately exposed to moisture by washing it several times with water. This liquid petrolatum was then used to dissolve a combination of chlorobutanol and menthol, a solution which had shown only slight cloudiness in the first series. When prepared with hydrated liquid petrolatum the product was very cloudy when prepared by METHOD A and cloudy when prepared by METHOD B.

In order to prepare an anhydrous solution of chloral a sample of the chemical was prepared by distilling a mixture of chloral hydrate and sulfuric acid. The resulting liquid had the physical characteristics of pure chloral. This substance dissolved in the liquid petrolatum without cloudiness in the presence of menthol. This combination of ingredients had been very cloudy when prepared by using chloral hydrate in the first series.

A careful consideration of these results leads us to believe that the presence of moisture in the materials used is the primary source of cloudiness in liquid petrolatum sprays. In all instances where cloudiness had been produced when ordinary materials were used, clear solutions resulted if anhydrous materials and anhydrous liquid petrolatum were used. It is recommended that such substances as chlorobutanol, crystalline phenol and related substances which are to be used in the preparation of liquid petrolatum solutions be stored in airtight containers in a cool dry place, and preferably in desiccators containing fused calcium chloride.

In explanation of the increased cloudiness which results when METHOD A is used, the following mechanism is suggested: When the eutectic liquid is formed between two substances, either of which contains an appreciable amount of moisture, the water is repelled by the oily liquid produced and is thrown out as a separate phase. When the liquid is taken up by the liquid petrolatum it produces an obvious cloudiness. On the other hand, if the substances are dissolved separately in the liquid petrolatum, any water present is dispelled in a more diffuse state which may not be noticeable. Upon standing a small globule of water usually separated from those combinations which were cloudy. This was observed whether METHOD A or METHOD B had been used.

Table I (on next page) presents a summary of the experimental results. The table is self-explanatory.

Conclusions

1. The evidence presented by this study indicates that when combinations of the substances studied are dissolved in light liquid petrolatum in the concentrations used,

† Small individual desiccators were improvised for this purpose by using large ointment jars as the external container. These were stored at room temperature in all instances except for the desiccator containing ephedrine which was stored in a refrigerator.[4]

TABLE I

Combination	Method	Usual ingredients and petrolatum*	Usual ingredients and anhydrous petrolatum*	Anhydrous ingredients and petrolatum*	Hydrous ingredients and petrolatum*
Chlorobutanol-menthol	A	slightly cloudy	slightly cloudy	clear	very cloudy
	B	clear	clear	clear	cloudy
Chlorobutanol-camphor	A	slightly cloudy	very slightly cloudy	clear	
	B	clear	clear	clear	
Chlorobutanol-phenol	A	slightly cloudy	very slightly cloudy	clear	
	B	cloudy	slightly cloudy	clear	
Chlorobutanol-eucalyptol	A	cloudy	very slightly cloudy	clear	
	B	clear	clear	clear	
Chlorobutanol-methyl salicylate	A	slightly cloudy	clear	clear	
	B	slightly cloudy	clear	clear	
Chlorobutanol-thymol	A	cloudy	slightly cloudy	clear	
	B	slightly cloudy	slightly cloudy	clear	
Chlorobutanol-ephedrine	A	very cloudy	cloudy	slightly cloudy	
	B	very cloudy	cloudy	clear	
Menthol-camphor	A	slightly cloudy	clear	clear	
	B	clear	clear	clear	
Menthol-phenol	A	clear			
	B	clear			
Menthol-eucalyptol	A	clear			
	B	clear			
Menthol-methyl salicylate	A	clear			
	B	clear			
Menthol-thymol	A	clear			
	B	clear			
Menthol-ephedrine	A	cloudy	cloudy	clear	
	B	cloudy	cloudy	clear	
Menthol-chloral hydrate	A	very cloudy	very cloudy	clear	
	B	cloudy	slightly cloudy	clear	
Camphor-phenol	A	clear			
	B	clear			
Camphor-eucalyptol	A	clear			
	B	clear			
Camphor-methyl salicylate	A	clear			
	B	clear			
Camphor-thymol	A	clear			
	B	clear			
Camphor-ephedrine	A	cloudy	slightly cloudy	clear	
	B	cloudy	slightly cloudy	clear	
Phenol-eucalyptol	A	clear			
	B	clear			
Phenol-methyl salicylate	A	clear			
	B	clear			
Phenol-thymol	A	clear			
	B	clear			
Phenol-ephedrine	A	cloudy	slightly cloudy	clear	
	B	cloudy	slightly cloudy	clear	
Eucalyptol-methyl salicylate	A	clear			
	B	clear			
Eucalyptol-thymol	A	clear			
	B	clear			
Eucalyptol-ephedrine	A	cloudy	slightly cloudy	clear	
	B	cloudy	slightly cloudy	clear	
Methyl salicylate-thymol	A	clear			
	B	clear			
Methyl salicylate-ephedrine	A	cloudy	slightly cloudy	clear	
	B	cloudy	slightly cloudy	clear	

* Light liquid petrolatum.

any obvious cloudiness which results is due to moisture contained in the ingredients, regardless of the order of mixing.

2. Cloudiness may be produced as a result of moisture either in the liquid petrolatum or in the solid materials.

3. It is recommended that all materials used in the preparation of liquid petrolatum sprays be maintained in an anhydrous condition.

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Tice on U. S. P. Committee

Professor Linwood F. Tice, Assistant Dean of the Philadelphia College of Pharmacy and Science, has been elected to membership on the U. S. P. Revision Committee to fill the vacancy caused by the death of Professor A. G. DuMez.

Professor Tice brings to the work of U. S. P. Revision many years of close affiliation with Pharmacopoeia work in the central office. For two Revisions he has written the widely distributed booklet on "What's New in the U. S. P." His researches in iodine solutions helped to develop the present U. S. P. 2% antiseptic iodine tincture and in gelatin the special form of gelatin sold as "Pharmagel," now accepted by the U. S. P. as an efficient emulsifying agent.

He is widely known as an author and as the editor of the *American Journal of Pharmacy*.

MRS. JAMES H. BEAL

When the history of the AMERICAN PHARMACEUTICAL ASSOCIATION is written, it will be incomplete if it does not refer to the activities of women pharmacists and the wives of pharmacists.

The recent demise of Mrs. James Hartley Beal, who passed away at her home in Cocoa, Fla., on January 25, brings to mind the quiet but nevertheless influential part the wives of presidents of the A. PH. A. have played in the careers of many of the leaders in American pharmacy.

Mrs. Beal was not only the wife of one of the most outstanding of A. PH. A. presidents, but also the mother of an A. PH. A. president, who is now chairman of its Council.

Gracious in her manner, always considerate of the welfare of others, deeply interested in the A. PH. A. Women's Auxiliary in its very early as well as more recent years, Mrs. Beal attracted the friendship of both old and young in the A. PH. A. family.

With honors coming to both her husband and her son continuously throughout her lifetime, Mrs. Beal must have experienced great satisfaction and pride in the contribution these men made to the advancement of pharmacy. Her quiet, unassuming, friendly spirit will remain as a treasured memory with those who were fortunate enough to enjoy the company of the Beals at A. PH. A. Conventions.

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IODIZED OIL	IODOCHLOROHYDROXYQUINOLINE
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STUDENT BRANCHES

OFFICERS of the **University of Pittsburgh Branch,** who will serve this year, are: Edward Hudack, president; William Blockstein, first vice-president; Bernard Ivanschultz, second vice-president; Don Stewart, treasurer; William Squires, secretary.

The **University of Washington Branch** recently viewed the movie, "Regional Anesthesia." The Branch also reports the first issue of its new publication, "Pharm Phorum." Officers elected to serve the Branch during the coming year include: President, David Richardson; vice-president, Floyd Boagland; secretary, Alice Louie; treasurer, Dick Cornell; and adviser, Edward Krupski.

Pharmacy students and graduates of **St. John's University** College of Pharmacy, Brooklyn, N. Y., have been urged to obtain a copy of the "Findings and Recommendations of the Pharmaceutical Survey" and carefully study the recommendations included therein. This suggestion was made by Dr. Robert L. Swain, Editor of *Drug Topics*, who recently addressed a meeting of the A. PH. A. Student Branch at the College.

The regular montly meeting of the **University of Buffalo Branch** included a debate on the subject of socialized medicine. Edgar E. F. Miller, Jr., and William J. Merow spoke for the affirmative; Donald H. Swift and Howard J. Schaeffer represented the negative side.

Officers of the **Oregon State College Branch** elected at a recent meeting for the coming year are: President, Kenneth Burson; vice-president, Theron Northrup; secretary, Mary Jane Schermerhorn; treasurer, Stanley Neitling; and historian, Donald Schirmer. Following the election, the members of the Branch and visiting dentists from Corvallis witnessed a movie on surgical Gelfoam.

A revised constitution has been approved for the **Branch at the University of Southern California.** Recent participants in Branch meetings include Mrs. Norma Irish, chief pharmacist at the Santa Fe Hospital in Los Angeles, and Charles Towne, pharmacist connected with Veterans Administration hospitals.

Lectures delivered before the **Branch of the Massachusetts College of Pharmacy** last month included one by John Bicketing, past president of the Boston Association of Retail Druggists, who spoke on the subject, "Retail Pharmacy."

Bill L. Fineman represented the **University of Michigan Branch** in a competition at Detroit for the McCabe Speech Award. Mr. Fineman spoke on the subject of "Counterprescribing." Officers of the Branch for this year are: Allan L. Beattie, president; Kenneth W. Riebe, vice-president; Arthur Kolin, treasurer; and Jean G. Rae, secretary. The Branch will sponsor a banquet May 10 honoring the graduating senior class. Dr. Ivor Griffith, Dean of the Philadelphia College of Pharmacy and Science, will be guest speaker.

A quarterly report of the **Ohio State University Branch** indicates some very interesting meetings. At its November meeting, the group heard a "Date with an Atom," an informative talk on some of the not too complicated phases of nuclear fission which was given by Dr. John Cooper, a professor of physics working with the betatron at Ohio State. At the January meeting, the Branch entertained members of the Ohio State Board of Pharmacy and listened to a discussion by the Board's officers on the various phases of the Ohio State pharmacy examination. Dr. John Mitchell, well-known Columbus doctor, gave a talk at the February meeting on "Allergies," which he illustrated with colored slides.

As a part of the Diamond Jubilee Program of Ohio State University, the College of Pharmacy will hold Open House on May 11 and sponsor a Pharmacy Conference on May 12. The Ohio State University A. PH. A. Student Branch will hold its annual convention on the campus May 13.

University of Wisconsin Branch reports that a laboratory of physical pharmacy has just been completed to improve facilities for teaching physicochemical principles in the School of Pharmacy. This area of instruction and research in the pharmacy department is under the direction of Dr. Takeru Higuchi, who was formerly engaged in the Government's synthetic rubber research program at the University of Akron (Ohio). In the industrial pharmacy laboratory, a rotary tablet machine has been obtained to increase facilities for student instruction and production capacity for tablets supplied to dispensaries of Wisconsin State institutions.

Dr. Joseph V. Swintosky became a full-time instructor in pharmacognosy this year, replacing Dr Amos B. Colby, who accepted a post at Ohio State. Dr. Swintosky also is the new faculty adviser of the University Pharmaceutical Society, a joint organization representing the student branches of the Wisconsin Pharmaceutical Association and the AMERICAN PHARMACEUTICAL ASSOCIATION.

The **Howard College Student Branch** members were hosts to the Women's Auxiliary of the Birmingham Retail Druggists Association on March 3 when Dr. Valley, senior research biologist of Bristol-Meyers, spoke on "Antibiotics Past, Present, and Future.

To meet the demands of business, students beginning pharmacy at Howard College must now take accounting and either economics, business law, or marketing. These courses are in addition to drug store management and pharmaceutical jurisprudence, already in the curriculum.

A paper on the "United Nation's Protocol and National Control of Narcotic Drugs" featured the January meeting of the **Northern New Jersey Branch.** Alfred Tennyson of the Narcotic Bureau was the speaker. A report also was heard from the branch committee on science and practice of pharmacy which dealt with the drugs used in the treatment of epilepsy.

The following officers were elected by the **Auburn Branch** to serve during 1949: Prof. George Hargreaves, faculty advisor; C. A. Walton, president; D. D. Stewart, vice-president; Mary Kirkland, secretary; Tom Cannon, treasurer; Joe Wallace, publicity chairman; Virginia Blanton, assistant publicity chairman. A membership drive was launched as the project for the winter quarter. At the first February meeting Phil Hudson, president of the Alabama Pharmaceutical Association, talked on "Associations of Pharmacy, Both Local and National."

LOCAL BRANCHES

A. PH. A. President Ernest Little addressed a recent meeting of the **Northern Ohio Branch,** emphasizing the fact that the A. PH. A. is the only organization which embrances all fields of pharmacy and could thus represent an organized front for pharmacy. He stressed the need for building, up the local membership. At a subsequent meeting the Northern Ohio Branch reported that the Cleveland Health Museum wished to obtain permanent displays of the colors for medicinals, as they would be of value to them for lecture purposes. The project of preparing the displays was given to the **A. PH. A. Student Branch of Western Reserve University.**

The Scientific Section of the **Cincinnati Branch** states it has had a successful year and that the scientific personnel of Cincinnati are taking an active interest in its work. Officers of the group are: Chairman, Dr. Lauretta E. Fox; vice-chairman, Dr. H. W. Werner (Head, Pharmacology Dept., Wm. S. Merrell Co.); and secretary, Harry Leyland, all of Cincinnati; and treasurer, Nathan Stoller, Covington, Ky. Speakers at a recent meeting of the Scientific Section and topics of discussion were: Dr. Francis E. Ray, University of Cincinnati, "Chemical Carcinogens;" Dr. M. J. Foter, Wm. S. Merrell Co., "Oral Hygiene;" Harry Leyland, Cincinnati College of Pharmacy, "Chromatography."

The March dinner and meeting of the **Philadelphia Branch,** held at the Philadelphia College of Pharmacy and Science, was the inter-professional dinner and meeting which brought together guests from various medical and pharmaceutical societies. Immediately following the dinner, Dr. Ernest Little, President of the AMERICAN PHARMACEUTICAL ASSOCIATION, gave a short talk. After the brief business meeting which followed, Dr. F. F. Borzell, speaker of the House of Delegates, American Medical Association, discussed AMA's medical care program.

At the March 25 meeting of the **City of Washington Branch** "Antibiotics—Their Past, Present, and Future" was the subject of a talk by Dr. G. A. Valley, senior research bacteriologist, Bristol Laboratories, Inc.

Dr. Joseph A. Muenzer of Toledo addressed the **Northwestern Ohio Branch** at Toledo on March 23 on the subject of "Silicosis." The speaker reviewed earlier concepts of the disease and told of the industries in which it occurs, the chief of them being the foundry, ceramic and mining industries.

The March 14 meeting of the **New York Branch,** held at the Columbia University College of Pharmacy, was devoted chiefly to "The Findings and Recommendations of the Pharmaceutical Survey 1948." The speakers and topics of discussion were: Marty Sasmor, past president of the **New York State Pharmaceutical Association,** "The Retail Pharmacist and the Survey;" the second speaker Robert R. Gerstner, member of the New York State Board of Pharmacy, "The State Board Member and the Survey;" and Dean John L. Dandreau of St. John's University College of Pharmacy, "The Educator and the Survey."

"Cardiac Disorders" were discussed by Dr. James Turner at the March 16 meeting of the **Northern California Branch.** The speaker, a pharmacist who studied medicine and held a fellowship at the Mayo Clinic, described the pharmacist's role in aiding the physician to treat cardiac disorders.

The Chicago Branch recently voted unanimously to affiliate with the Chicago Industrial Health Association in carrying on an extensive program of popular education for employees, their families, and the community. Thirty-seven health and medical agencies are now joined in developing and presenting the Association's program to make the working citizens of Chicago health-minded. One feature of the program is a daily radio show entitled "It's Your Life," sponsored by the Johnson and Johnson Co.

INFORMATION SERVICE

Members of the American Pharmaceutical Association are invited to submit their professional problems to the Journal, 2215 Constitution Ave., N. W., Washington 7, D. C., giving all pertinent details. Advisory service is provided by the A. Ph. A. library and technical staff and the Journal panel of technical consultants.

STREPTOMYCIN "EAR DROPS"

Where may I find information on the use of topical streptomycin in ear drops?—W. G., Texas

Ear drops of streptomycin are sometimes used in which 1 Gm. of streptomycin is dissolved in 12 cc. of water, according to a paper by Holt and Snell in *Archives of Otolaryngology*, 45, 169 (1947).

HISTAMINE

Where may I obtain histamine dihydrochloride?—M. G., Illinois

Histamine dihydrochloride is distributed by Fairmount Chemical Co., Inc., 136 Liberty St., New York 6; B. L. Lemke & Co., 248 Broadway, New York 13; and Mann Fine Chemicals, Inc., 136 Liberty St., New York 6.

SOURCES OF SUPPLY

Kindly let us know the sources of the following: cetyl alcohol, benzyl succinate, calcium succinate and salicylanilide.—L. G., Pennsylvania

Cetyl alcohol and salicylanilide are manufactured by E. I. du Pont de Nemours, Wilmington, Del. The Alba Chemical Corp., Hawthorne, N. J., is a distributor of cetyl alcohol. Calcium succinate is supplied by Fallek Products Co., 149 Broadway, New York 6. Benzyl succinate in bulk may be obtained from Merck & Co., Rahway, N. J., and in tablets from Hynson, Westcott & Dunning, Baltimore, Md.

DEIONIZED WATER

We are interested in using deionized water as a substitute for distilled water in compounding prescriptions. Can you tell us whether or not this water will be satisfactory to use? What will be the reaction with silver nitrate?—J. R., Louisiana

Deionized water is used quite extensively in pharmaceutical manufacturing at the present time. If completely deionized, as the name implies, deionized water will produce no visible reaction with silver nitrate.

AVAILABLE AS INJECTION

We would like to obtain either an enteric coated tablet or capsule of the following formula: sod. salicylate, 5 grs.; sod. iodide, $2^1/_2$ grs.; colchicine, $^1/_{100}$ grs.—R. I., Virginia.

This combination of drugs as far as we have been able to determine is supplied only as an injection. None of the price lists or encyclopedias of drugs and dosage forms list tablets or capsules containing sodium salicylate, sodium iodide, and colchicine.

SOURCE OF PROMIN

I should like to know where the drug Promin can be obtained.—S. S., California.

This drug is manufactured exclusively by Parke, Davis and Co., Detroit, Mich. It is supplied in the form of a 5% jelly and an intravenous solution containing 2 Gm. in 15-cc. ampuls.

PHENOBARBITAL-THIAMINE HYDROCHLORIDE ELIXIR

We are now producing a tablet containing phenobarbital, 15 mg. and thiamine hydrochloride, 6 mg. We want to market an elixir containing this formula in each dram. We would like to have, in essence, elixir phenobarbital U. S. P. with the addition of thiamine hydrochloride. Have you had any experience as to the stability of this mixture?—L. M., Wisconsin.

We have had no experience with an elixir containing phenobarbital and thiamine hydrochloride. Since the main thing you are interested in is the stability of such a preparation, probably the best approach would be to prepare samples of the elixir you have in mind. After varying periods of time, have the samples assayed to determine whether or not there is a loss of thiamine hydrochloride through decomposition or any change in the phenobarbital content. Thiamine hydrochloride is unstable in aqueous or hydroalcoholic solutions unless adjusted to a *p*H of 5 or less. We are not sure just what the acidity of phenobarbital is but this is something that can be readily determined.

CARBOXYMETHYL CELLULOSE

Could you give me some information on the chemical sodium carboxymethyl cellulose:—S. K., New Jersey

This compound is manufactured and distributed by the Cellulose Products Department, Hercules Powder Co., Wilmington, Del. The firm offers a booklet describing the physical and chemical properties and the uses of sodium carboxymethyl cellulose.

STRYCHNINE NITRATE

We have been unable to obtain strychnine nitrate to be used in the manufacture of compound glycerophosphates elixir. Can you suggest sources of supply? Is any other strychnine salt allowable in this elixir?—R. D., New York.

We have been unable to locate the source of this chemical. We have been conscious of the fact that strychnine nirate has not been available for use in the manufacture of compound glycerophosphates elixir. This is probably due to the fact that relatively small quantities of strychnine nitrate are

PRESCRIPTION INFORMATION SERVICE

(Concluded on Page 237)

proved by test and taste

IN PROTEIN SUPPLEMENTATION

TESTS demonstrate: *high biological value* in growth studies; *all recognized essential amino acids* provided in significant quantities.

TASTE and adaptability to a variety of vehicles ensure patient-acceptance.

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Typical Days

FROM THE SECRETARY'S DIARY FOR FEBRUARY 15 TO MARCH 5

15th Today a visit from Mr. and Mrs. Hoge of Wheeling, West Virginia, who are on their way South. It is a pleasure to note the keen interest in all phases of pharmacy displayed by this well-known West Virginian, who prides himself on having been Dr. James H. Beal's first graduate at the Scio College of Pharmacy. In the afternoon to speak to the student body of the College of Pharmacy of Howard University and found this group most alert and eager to cope with the new problems in our field. Later a visit from Pat Costello, who returned from "District 2" meeting in Richmond with Blivin, Kinner and Franzoni and able to iron out some Convention program details, especially those dealing with the program of the Conference of Pharmacy Law Enforcement Officials. Also a brief visit with Tom Rowe to discuss Pharmacy Week developments and pleased to see members of the N. J. Board of Pharmacy at Union Station. To dinner with Jim Hill, Dean Lemon and Dr. Keagle before they hustled to their train for Buffalo, and then working with Jim Hill on State Food, Drug and Cosmetic law problems.

16th This morning addressing the Senior Class of George Washington University School of Pharmacy on pharmaceutical organizations, and in the afternoon to the Food and Drug Administration with Jim Hill and L. M. Kantner to review progress in making State Food, Drug and Cosmetic Acts uniform with the Federal law.

17th The late morning and most of the afternoon spent with the Steering Committee of the Committee on Status of Pharmacists in the Government service. Here came Einbeck, Frates, Goriup, Briggs, Geiger and Archambault to review various phases of Government activity of pharmacists, in preparation for the annual report of this committee.

22nd Yesterday and today given almost entirely to conferences with the Committee of Six, which met to conclude its current consideration of A. PH. A. organization and to revise the Constitution and By-laws. Here came Christensen, Beal, Webster, Moulton and Darnell of the Committee, with President Little and House of Delegates Chairman Mull to spend two days and much of one night in an endeavor to deal with a difficult problem. This evening the Town Meeting of the Air featured a discussion of "Socialized Medicine," with Oscar Ewing, Morris Fishbein, Senator Smith and Labor Statistician Cruikshank giving and taking in a match of wits, rather than a discussion of fundamentals. One questions whether such debates settle anything except who happens to be best at repartee.

24th Most of the day in the meeting of the Medical Advisory Committee of the National Security Resources Board, over which Dr. Crabtree presides with much ability. Presented a statement in behalf of pharmacy manpower requirements and the ability of pharmacists to render important community services in emergencies.

25th Greatly disappointed at inability to attend Cancer Research meetings at Memphis, Tennessee, but happy that Dean Crowe was able to pinch-hit, as he has made a real contribution to cancer education by arranging contact of pharmacy students with cancer clinics.

1st A visit from Colonel Riordan of General MacArthur's staff, who came to talk some more about A. PH. A. cooperation in advising Supreme Headquarters on Japanese pharmaceutical problems. Also a visit from J. Curtis Nottingham, Secretary of the Virginia Pharmaceutical Association, who extended a most cordial invitation to address the annual convention of that group in Roanoke next June. At luncheon with Messrs. Kinsey, Foster and Archambault, the pharmaceutical triumvirate within the Public Health Service which is giving such a good account of itself.

2nd A busy day completing approval of the Guidance Leaflet for pharmacy students and prospective students, which will be published jointly with the Office of Education and the supplement to the March Journal which will carry the membership lists and much essential ASSOCIATION information.

3rd This day completing the correspondence with members of the Iowa Legislature opposing amendment to the Pharmacy Act, which would nullify an important decision of the Iowa Supreme Court that goes far in establishing the validity of the argument that drugs should be dispensed only by pharmacists.

5th Much to do with the Hospital Pharmacy Division, especially in planning for its long-range future, the 1949 Institutes and the Convention program.

PRESCRIPTION INFORMATION SERVICE

(Concluded from Page 235)

STRYCHNINE NITRATE (continued)

needed for this purpose. Perhaps it might be advisable to use strychnine rendered soluble by the addition of a calculated amount of nitric acid to convert it to the nitrate. This is the only suggestion we can make at this time.

SOURCES OF SUPPLY

I have been asked by several physicians to obtain information on the following three items: Di-isopropyl-fluorophosphate, tetraethyl pyrophosphate, and adsorgan. Adsorgan is a preparation that was made in Europe and is now believed obtainable or made in the United States.—G. G., British Columbia.

Di-isopropyl-fluorophosphate, familiarly known as DFP, is made and distributed by Merck and Company, Rahway, N. J.

As far as we have been able to learn, tetraethyl pyrophosphate is not available in this country for drug use.

Adsorgan is a product of the Heyden Company, Rodebeul-Dresden. This is said to be a preparation of 40% silver chloride-silica gel with another silver compound, the exact character of which we were not able to determine. To the best of our knowledge this preparation, or its equivalent, is not sold in the United States.

MORE ABOUT CASTRIX

In the February, 1949, edition of Prescription Information Service, the rodenticide Castrix was discussed briefly. We are indebted to Winthrop-Stearns, Inc. for the following additional information relating to Castrix:

"With reference to your question and answer on Castrix appearing in the February issue of the JOURNAL of the AMERICAN PHARMACEUTICAL ASSOCIATION, Practical Pharmacy Edition—page 116, we should like to point out that Winthrop-Stearns is the assignee of U. S. Patent No. 2,219,858 covering the products 2 chloro-4-dimethyl amino 6-methyl pyrimidine and 2-dimethylamino-4-chloro-6-methyl pyrimidine, otherwise known as Castrix (trademark).

"Under our license, General Drug Company has recently undertaken to manufacture Castrix and is now in a position to distribute experimental lots to qualified investigators. There are conflicting reports regarding the acceptability of this material in rats and an experimental program now under way is designed to determine whether or not Castrix has a place in the control of rodents, and just what restrictions will be necessary in handling it."

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ARMY MEDICAL SERVICE CORPS NAMES ASSISTANT CHIEFS ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

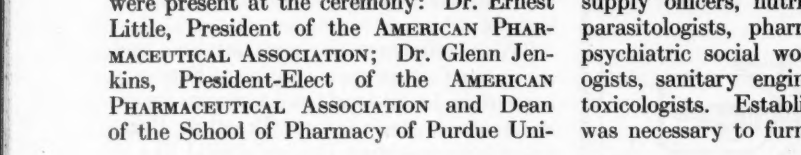
J. V. Painter Appointed Chief of Pharmacy, Administration and Supply Section

IN THE presence of Brigadier General George E. Armstrong, Deputy Surgeon General of the Army, and eminent members of scientific societies, Lieutenant Colonel Charles S. Gersoni, Major Raymond J. Karpen and Major John V. Painter were sworn in last month as the first appointed Assistant Chiefs of the Medical Service Corps.

The new Assistant Chiefs will serve as respective Chiefs of the three sections of the Corps: Colonel Gersoni as Chief of the Medical Allied Sciences Section; Major Karpen as Chief of the Sanitary Engineering Section; and Major Painter as Chief of the Pharmacy, Administration and Supply Section.

In addition to Colonel Othmar F. Goriup, Chief of the Corps, and other executives of the Surgeon General's Office, the following were present at the ceremony: Dr. Ernest Little, President of the AMERICAN PHARMACEUTICAL ASSOCIATION; Dr. Glenn Jenkins, President-Elect of the AMERICAN PHARMACEUTICAL ASSOCIATION and Dean of the School of Pharmacy of Purdue University; Colonel Michael J. Blew, MSC, Reserve; Gerald G. Gross, Editor of the Washington Report on the Medical Sciences; Dr. Norman Loffer, President of the American Society of Professional Biologists; Dr. Leland Parr, Executive Secretary of the American Bacteriological Association; Paul Robbins, Executive Secretary of the National Society of Professional Engineers; Dr. Joseph F. Sadusk, Executive Director of the Committee on Medical Sciences of the Research and Development Board; George E. Taylor, Assistant Secretary of the American Chemical Society; Dr. Dael Wolfle, Executive Secretary of the American Psychological Association, and a member of the Council of the AAAS.

The Medical Service Corps was established by the 80th Congress on September 7, 1947. The Corps consists of commissioned specialists in scores of fields closely allied to medicine: Aviation psychologists, bacteriologists, biochemists, clinical psychologists, entomologists, hospital administrators, medical supply officers, nutritionists, optometrists, parasitologists, pharmacists, physiologists, psychiatric social workers, psycho-physiologists, sanitary engineers, serologists, and toxicologists. Establishment of the Corps was necessary to furnish these professional



Seated (Left to Right) Lieutenant - Colonel Charles S. Gersoni, Chief, Medical Allied Sciences Section; Colonel Othmar F. Goriup, Chief, Army Medical Service Corps; Major Raymond J. Karpen, Chief Sanitary Engineering Section; Major John V. Painter, Chief of Pharmacy, Supply and Administration Section.

Dr. Ernest Little (left) and Dr. Glenn Jenkins (right), President and President-Elect of the American Pharmaceutical Association with Maj. John V. Painter, Assistant Chief, Medical Service Corps, and Chief of Pharmacy, Supply and Administration Section, just after Major Painter received his new appointment as Assistant Chief of the Corps.

skills in order that the Army might continue to provide medical care equal to, or better than, the medical care of civilian life.

In referring to the qualifications of the Assistant Chiefs for their new posts, General Armstrong cited the distinguished records that they had made during the war.

General Armstrong said Major Painter was integrated into the regular Army in 1938 as a pharmacist in the Medical Administration Corps following a competitive professional examination. His Army training was received at Carlisle Barracks Medical Field Service School and at the Army Medical Center in Washington, D. C.

As Executive Officer of the St. Louis Medical Depot, he was commended by Major General Norman W. Kirk, the Surgeon General, for outstanding performance of his duties. In October, 1945, Major Painter was made Chief of Medical Supply of the Far East Command and moved with General McArthur's Headquarters from Manila to Tokyo, where he remained until called to the Surgeon General's Office in December, 1948, to serve as Chief of the Overseas Section, Distribution Branch of the Supply Division.

He holds a B.S. degree in Pharmacy, is 34 years old, and a native of St. Paul, Minn. He is a member of the AMERICAN PHARMACEUTICAL ASSOCIATION; Rho Chi, honorary pharmacy society; and Phi Lambda Upsilon, honorary chemical society.

SYNTHETIC COAL TAR DEEMED EQUAL TO NATURAL PRODUCT

Synthetic coal tar ointment appears to be equally as effective as coal tar ointment N. F., and has the advantages of pharmaceutical elegance and cleanliness. This conclusion was reached by Dr. T. S. Saunders and W. C. Davis of Portland, Ore., following clinical trials designed to compare the official ointment with the synthetic product as supplied by Sharp and Dohme. The preparation was prescribed in 38 cases that included 17 different dermatologic entities. In all instances the synthetic tar appeared to be as effective as the crude product; but when the crude product used as a control was of no benefit, the synthetic tar cream was likewise ineffective.

science news capsules

DRAMAMINE is the name given to a new chemical stated to be the best remedy and preventive yet found for seasickness and other forms of motion sickness. The chemical was undergoing tests in the Allergy Clinic of the Johns Hopkins Hospital when it was accidentally found to be effective against carsickness. A special study of seasickness was then carried out on the Army Transport "General Ballou" last December with 1,376 men aboard. Less than 2% of the men receiving preventive doses developed seasickness. Of those given the drug to cure seasickness after it had developed, all but 3% received complete relief. Dramamine is now available from G. D. Searle & Co. of Chicago. Its full chemical name is betadimethylaminoethyl benzohydryl ether 8-chlorotheophyllinate.

PARPANIT (diethylaminoethyl-1-phenylcyclopentane-1-carboxylate hydrochloride), a relatively new synthetic drug, is aiding victims of Parkinson's disease. Writing in the March 5 issue of the *Journal of the American Medical Association*, Drs. Robert S. Schwab and Dennis Leigh of the Department of Neurology and Psychiatry, Massachusetts General Hospital and Harvard Medical School, report on a study of 50 patients with Parkinson's disease treated with parpanit tablets. Thirty-one of the group experienced more improvement from parpanit than from previous treatment with scopolamine, stramonium or belladonna. Parpanit is one of the most efficient and least toxic of a number of related compounds developed in Switzerland. The drug has desirable relaxing effects similar to derivatives of belladonna. Supplies of parpanit and support for the investigation were furnished by Geigy Co., Inc., New York, and J. R. Geigy, S. A., Basle, Switzerland.

A MAJORITY of American parents neglect the dental health of their children, and only one person out of five has a dental checkup semiannually and brushes his teeth three times daily. These conclusions concerning the dental health habits of the American people are reported in an article by Dr. J. M. Wisan, director of the Joseph Samuels Dental Clinic, Providence, R. I., and Dr. Allen O. Gruebbel, executive secretary of the Council on Dental Health of the American Dental Association (*J. Am. Dental Assoc.*, **38**: 19, 1949). A survey of 2205 families representing a cross section of the population revealed that the 3 to 9 age group is most neglected. Nearly one-third of the group had not had a dental examination within the past two years and of those who had started treatment, about two-thirds had not completed it within two years. Only one other age group—those over 50—had a worse dental health record. Housewives answered the questions for all members of the families totaling 7057 persons. Other interesting facts gleaned from those reporting are that: Approximately 95% of them owned a toothbrush; only 42.8% said they brushed their teeth twice a day; 18.8% reported they brush their teeth three times a day; 59.9% brush their teeth before retiring and 49.4% upon arising; only 20.4% of the people had visited their dentists twice a year during the preceding two years. About one-fourth of the respondents reported using toothpicks and chewing gum in addition to toothbrushes for cleaning their teeth. Others used washcloths, kitchen cleanser, cotton, olives and calcium tablets for oral hygiene. This survey is the second half of a study, the first part of which indicated that four out of five toothbrushes now in use in American families are so badly worn or in such unsanitary condition as to be unsuitable for use in oral hygiene.

A CHEMICAL may be found which can be added to sugar to offset the protection it gives to the activities of acid-forming bacteria responsible for tooth decay, according to Prof. Kenneth A. Eastlick of the University of Michigan. Carbamide, which is tasteless, easily synthesized and cheap, has given best results so far and is being tested on a large group of school children, along with a dentifrice of dibasic ammonium phosphate. Carbamide is able to penetrate the dental plaques that shelter the caries-causing bacteria from the action of saliva, which would otherwise neutralize them. Dr. Eastlick also pointed out in his address to the American Public Health Association in New York recently that the bacertia could be literally starved by relatively short periods of abstinence from sugar and other foods necessary for their growth, but considering the fact that the average American now eats his own weight in sugar every year, he doubts that such a campaign would be successful. While sodium fluoride solution can prevent caries in the teeth of children, there is no evidence yet that it can help adults' teeth.

HEXYLRESORCINAL, powerful germ killer which has been used as a household antiseptic, is effective for killing tapeworms, it appears from results reported by Dr. F. Hernandez Morales of the School of Tropical Medicine, San Juan, Puerto Rico. He treated 28 patients with this germicide, administering it in an emulsion through a tube reaching from the mouth through the stomach into the first part of the small intestine. No diet restrictions or purgatives were prescribed before the treatment, which proved to be effective in 92.8% of the cases.

A HOME CARE program for the sick was urged at a meeting of the American Public Health Association in Boston. Dr. Martin Cherkasky of Montefiore Hospital, N. Y., basing his statements on experience with such a program operated by Montefiore over the last 20 months, stated that the cost per patient was reduced from $15 to $3 a day. The program included around-the-clock medical service with specialists when necessary, social service assistance, housekeeping for five to ten hours a week, all medicines, hospital beds, wheel chairs, special mattresses, braces and other devices. Services of visiting nurse and occupational and physical therapists are other features of the home care program at Montefiore. Where the special facilities of a hospital are no longer needed, Dr. Cherkasky explained that the warmth and flexibility of a home are much better for the patient.

ELECTRIC SHOCK treatment of a girl who stammered so badly that she could speak only in occasional monosyllables has enabled her to talk freely. The case is reported to the *American Journal of Psychiatry* by Drs. Thelma V. Owen and Marguerite G. Stemmermann of the Owen Clinic, Huntington, W. Va. They conclude that at least in this case stammering was neurotic condition, in view of the remarkable effect of shock treatment and a temporary relapse that occurred when the girl re-established contact with her family. Orthodox treatments had produced only limited improvement.

RIDDLE of life on Mars might be solved in September, 1956. At that time the planet will be only about half as far from us as it was this February, when it made its closest approach in two years. New instruments such as the nearly completed Mt. Palomar telescope and the war-developed infrared spectrograph will then permit astronomers to judge more accurately whether life exists on Mars.

VIPER VENOM antidote may be a new use for anti-histamine drugs. Drs. J. S. Chowhan and D. P. Ghosh of Calcutta, India, have reported that Benadryl was effective in laboratory animals poisoned by viper venom and suggest trial of the drug in human victims.

TECHNETIUM, chemical element number 43, has been isolated for the first time by Dr. Sherman Fried at the Argonne National Laboratory, Chicago. Two samples were prepared from compounds produced in the atomic pile at Oak Ridge. Technetium, one of the last four of the 96 elements to be named, is similar to other rare metals (such as rhenium and ruthenium), which are near it in the periodic table.

IMPORTANT life processes may soon become visible through a new microscopic technique of color staining with light waves, which will not kill living cells. The instrument was developed by Dr. F. Zernike, professor of physics at the University of Groningen, The Netherlands, and described at the U. S. National Academy of Science meeting. Although still in the experimental stage, it is believed that the microscope will permit scientists to watch cells as they grow, multiply and function, and may even help discover what abnormal growth is.

PHYSICIANS are increasing in number more rapidly than the population of the United States. Dr. Frank B. Dickinson, director of the American Medical Association's Bureau of Medical Economic Research, announces that there are 17% more doctors today then in 1940, while the U. S. population has increased only 12% in the same length of time.

ac-GLOBULIN is the term used for a new protein found to play an important role in blood clotting. The factor was first reported by Dr. Paul A. Owren of the University of Oslo, Norway, and is described as being one of the triggers that sets in motion the clotting process. Four previously known substances are all necessary to produce clotting. Prothrombin, a blood protein, must be activated by thromboplastin, a substance present in tissues, and calcium to form thrombin. Thrombin is the intermediate substance that acts on fibrinothrombin, the fourth factor necessary in coagulation to form the blood clot.

WEED PATCHES too close to flower beds or shrubbery to risk spraying with 2,4-D can be treated by applying the herbicide with a paintbrush, Dr. L. W. Kephart of the U. S. Department of Agriculture suggests. Poison ivy vines, growing amid valuable plants, can be given a similar treatment.

ANTI-RAT campaigns in this country have reduced markedly the incidence of murine typhus fever, according to the U. S. Public Health Service. The disease, which is spread by rat fleas, has been a serious health problem in southern states for several years.

THREE-DIMENSIONAL radar has been patented by the Sperry Corporation. A "nodding" effect is introduced into the movement of the sending antenna; returning echoes are synchronized to produce two images on the scanning screen, with sufficient difference to produce a stereoscopic effect when viewed through polarizing telescopes.

CANCER OF THE FEMALE REPRODUCTIVE SYSTEM . . . .
No. 10 in a Series

ALMOST 25,000 cases of cancer of the female reproductive organs will be discovered this year. The chances of cure will depend largely upon the stage of the case —those discovered in the early, preinvasive stages will have a much better chance than those in the more advanced stages.

The pharmacist, who is often consulted informally by the public for advice on health matters, can do much to reduce the dangerous time lag between onset of the disease and the first visit to a physician. The most common early sign of cancer of the uterus and the uterine cervix—where most cancers of the female reproductive organs occur—is vaginal bleeding between regular menstrual periods or after menopause. Whenever abnormal vaginal bleeding or abnormal discharge is brought to a pharmacist's attention he should urge immediate medical attention.

Women should be cautioned against waiting for the bleeding to become worse. Even sporadic and infrequent vaginal bleeding, although not always associated with cancer, warrants a prompt medical examination.

Most cases of uterine cancer appear after the age of 35. They occur more frequently among women who have had one or more children. Chronic infections and unrepaired childbirth lesions are thought to be predisposing factors. For these reasons, the pharmacist should advise women over 35 to have pelvic examinations regularly twice a year and to have all uterine lesions corrected by a competent physician.

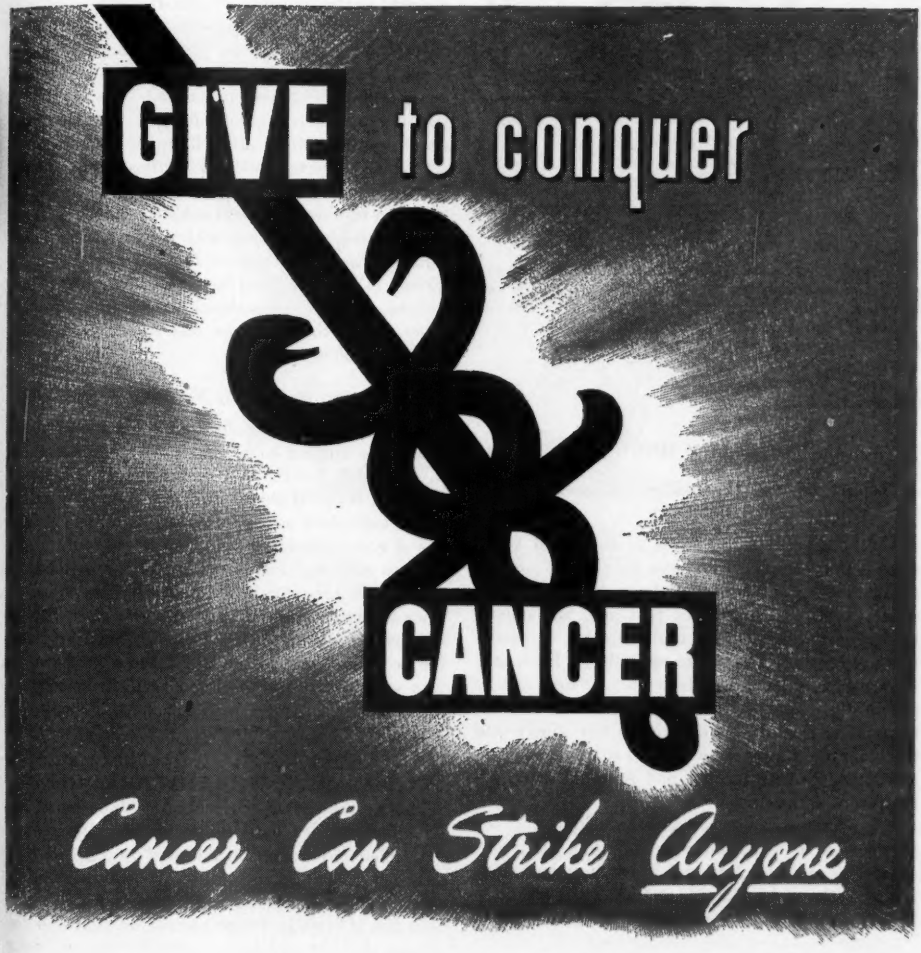
Cancer of the uterine cervix usually appears as a painless lesion which causes no symptoms at all for some time, but which can be found early by pelvic examination. Ordinarily the first symptom is a slight and irregular vaginal bleeding. As the lesion progresses, the bleeding usually increases and some discomfort may be felt in the lower abdomen. These symptoms are usually discontinuous and are too often ignored. In the early stages, however, the chances for a permanent cure of cervical cancer are excellent.

Cancer of the body of the uterus is usually first manifested by abnormal bleeding. Cancer of the female reproductive organs also appears occasionally in the ovaries and the fallopian tubes, where it may be detected by an examining physician in the course of a pelvic check-up more readily than by the woman herself. Early symptoms of primary cancer of the vagina, which is relatively rare, are irregular bleeding and discharge.

The nature of these types of cancer furnishes fully adequate reasons for regular physical examinations. In many cases, the physician can discover abnormal growths long before symptoms appear. Cervical or vaginal cancer can be seen directly in a pelvic examination. Cancer of the ovaries, fallopian tubes or body of the uterus may be felt by the physician through the abdominal wall. In summary:

Every woman over 35 should have a medical examination twice a year.

Every woman should see her physician immediately at the first sign of abnormal bleeding or discharge.



Give and keep giving to help science defeat the disease that strikes, on the average, one out of every two homes in America. Say to yourself . . . *here is life-giving money to help those stricken by Cancer to live again.*

EVERY NICKLE AND DIME *I give helps support an educational program teaching new thousands how to recognize Cancer and what to do about it.*

EVERY QUARTER *I give helps set up and equip new research laboratories where scientists are dedicating their lives to find the cause—and cure of Cancer.*

EVERY DOLLAR *I send helps buy new equipment, helps establish new facilities for treating and curing Cancer, both still pitifully scarce in this country . . .* Guard those you love! Give to conquer Cancer!

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JUST MAIL IT TO "CANCER"

Give as generously as you can—today. Your check or money order in an envelope addressed to "Cancer", care of your local post office, will be delivered to the American Cancer Society office in your state.

Here's my $..... to help conquer cancer

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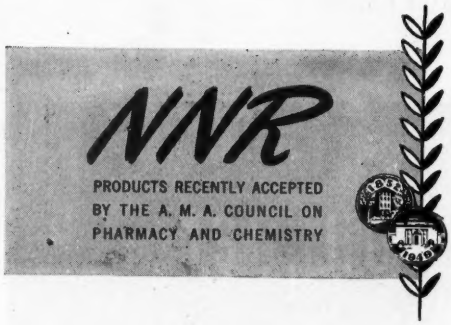

Council descriptions of new drug products only are published regularly in THIS JOURNAL *as they are accepted. Rules upon which the Council bases its action appeared in the July (7:320) 1946 issue, and may be secured in pamphlet form upon request to the Secretary, Council on Pharmacy and Chemistry, American Medical Association, 535 N. Dearborn St., Chicago 10, Ill.*

TOO MANY DRUGS?

A Report of the Council on Pharmacy and Chemistry

A fundamental requirement to successful treatment is that the physician have the clearest possible understanding of the remedial agents that he prescribes. This is difficult at best, and is rendered increasingly difficult with multiplication of agents that are nearly but not quite equivalent. Each may show minor differences, which may or may not be practically important, but which are difficult to learn if he spreads his experience too widely and therefore too thinly, as he is urged to do when pharmaceutical firms introduce and promote many actual or near duplicates.

A satisfactory advance has been achieved in the elimination of superfluous drugs from the Pharmacopeia, and the National Formulary has made praiseworthy strides in this direction, but the catalogs of drug houses continue to be overcrowded.

Two Examples

Two examples that come to mind are the estrogenic preparations and the "anti-histaminic" drugs. In both cases, synthetic chemistry is able to produce practically numberless agents. Both fields already are overcrowded, but new agents are still being introduced at an alarming rate which makes it practically impossible to acquire the experience that is necessary to determine what advantages, if any, they possess over the older similar agents. There is another side to the argument, however, for few if any therapeutic agents are ideal. Improvements, increased efficiency, fewer side actions and lower toxicity should be sought for. Skilful experimentation in this direction should be encouraged, not obstructed, but this thorough experimentation should *precede* the introduction into medical practice.

It were better, much better, for medical practice and probably for financial dividends, if modifications which do not offer substantial advantages were shunted into the discard before they see publicity and add to the confusion of practitioners.

As an example, it has been suggested to the Council that it decline to accept further antihistaminic drugs unless they offer at least one of the following advantages over the agents already accepted: (1) that the drug have a greatly increased potency over those now available so that it would be possible to give relief to certain allergic manifestations not relievable now; (2) that the drug be much less toxic than any now available and not 10 or 20% less toxic; (3) that the drug be more active for a much greater duration, not just three or four hours, but for 24 hours; (4) that the drug have other than histaminic actions, such as sympathomimetic action, or some other action that in some way interferes with the allergic mechanism.

Action Needed by Manufacturers

The Council agrees fully that some such criteria should be applied to all fields that are becoming overcrowded, but the Council believes that it would be much better if this is done by voluntary action of the individual manufacturers, rather than by the fiat of any central agency. The latter could easily tend to stifle legitimate and useful competition by cooperative manufacturers, while the less conscientious would go ahead and modify or pirate without Council acceptance. The Council therefore refers the problem to the good sense of the manufacturers who value the respect and good will of the medical profession.

RABIES VACCINE (ULTRAVIOLET IRRADIATION KILLED).—Brains of rabbits paralyzed by infection with fixed rabies virus are harvested, emulsified and brought to a desired concentration by suspension in isotonic solution of sodium chloride; the suspension is filtered and a continuously flowing thin film is irradiated with ultraviolet light and dispensed in vials containing sufficient material for a daily dose.

Actions and Uses.—Rabies Vaccine (Ultraviolet Irradiation Killed) is employed for the prophylaxis of rabies.

Dosage.—Contents of one vial subcutaneously daily for 14 to 21 days. For severe exposure bites on face or adjacent to central nervous system, 21 doses, two daily for the first three to seven days, then one dose daily. *Pitman-Moore Company, Indianapolis, Ind.*

Rabies Vaccine (Ultraviolet Irradiation Killed Virus): 1-cc. vials packaged in units of seven vials of a 10% suspension. Preserved with sodium ethylmercurithiosalicylate 1:10,000.

E. R. Squibb & Sons, New York

Rabies Vaccine (Ultraviolet Irradiation Killed Virus): 2-cc. vials packaged in units of seven vials of a 5% suspension. Preserved with sodium ethylmercurithiosalicylate 1:10,000.

RELIEF IN BRONCHIAL ASTHMA

MYOCARDIAL STIMULATION

DEPENDABLE DIURESIS

Aminophylline (Massengill) finds many fields of usefulness in the management of the cardiac patient and the patient afflicted with bronchial asthma.

In congestive heart failure, Aminophylline is a valuable diuretic, and also exerts a stimulating influence on the myocardium. Thus the organism not only loses accumulated fluid, but the cardiovascular system is also benefited by the greater cardiac output which results from stimulation of the heart muscle.

In bronchial asthma, Aminophylline exerts a relaxing effect upon the bronchial musculature, making possible greater pulmonary ventilation.

Average dose, 0.1 Gm. three times daily. This quantity may be doubled if necessary. Aminophylline (Massengill) is supplied in tablets of 0.1 Gm. in bottles of 100, 500, and 1,000, and in tablets of 0.19 Gm. in bottles of 100 and 500.

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AMINOPHYLLINE

COLLEGES

The class of 1922 of the **Columbia Unviersity College of Pharmacy**, New York City, will observe its 27th anniversary with an annual meeting, reunion, dinner, entertainment and dance at the Hotel Alamac on May 15.

The **University of Wisconsin School of Pharmacy** has appointed Dr. William Owen Foye, duPont research chemist, as assistant professor of pharmaceutical chemistry and Mohit C. Gupta as research assistant under Dr. Busse to continue the research project on application of the spray drying process to pharmaceuticals. Dr. Lloyd M. Parks has completed work on "Inorganic Pharmaceutical Chemistry," a text to be published in collaboration with Dr. Loyd E. Harris of Ohio State University and Dr. Paul J. Jannke of the University of Connecticut. A new approach to questions of incompatibility and solubility, based on electronic concepts, has been worked out by Wisconsin contributors to the forthcoming dispensing volume of "American Pharmacy"—Drs. Louis W. Busse, Takeru Higuchi and Dale E. Wurster.

The students at the **University of Connecticut** have presented the **College of Pharmacy** with a Bell and Howell sound projector and public address system in memory of the students who gave their lives in the last World War. A library of films showing various techniques in pharmaceutical preparations is being developed under the direction of Professors Nicholas Fenney, Paul Jannke and Donald Skauen. These films are shown to sophomore and junior students in pharmacy courses prior to their laboratory sessions and following a discussion of theory of the work involved. These teaching aids will be extended beyond the classroom into the University's public relations program in conjunction with the seven pharmaceutical associations in the State, as well as in conjunction with postgraduate clinics sponsored by the University of Connecticut College of Pharmacy.

Opaque visual equipment has been purchased by the **Howard College Division of Pharmacy** to assist students in deciphering the modern prescription. Every week 10 prescriptions difficult to decipher will be thrown on the screen and students of dispensing pharmacy will be asked to read these prescriptions. At the end of the course a practical examination will be given to test the students' deciphering ability.

Dr. George A. Valley, senior bacteriologist of Bristol Laboratories, addressed the students of the **University of Georgia School of Pharmacy** and the University of Georgia Science Club on March 9. His talk, which was sponsored by Rho Chi, was "Antibiotics—Present, Past, and Future," a discussion on penicillin, aureomycin, streptomycin, and several new antibiotics that are still in the experimental stage.

ASSOCIATIONS

John Culley, an Ogden pharmacist, whose lifelong devotion to promotion of high standards in the profession of pharmacy recently won him election as honorary president of the AMERICAN PHARMACEUTICAL ASSOCIATION, was toasted by speakers in and out of the profession at a recent dinner in the Ben Lomond Hotel at Ogden. The dinner was given by the **Utah Pharmaceutical Association** at the conclusion of a one-day conference, named in his honor as the John Culley Conference.

New York State Pharmceutical Association will hold its 71st Annual Convention June 12 to 17 at the Sagamore Hotel, Bolton Landing, Lake George N. Y. The feature of the convention will be "The Drug Store of 1950" exhibit, which will represent the accumulated experience and merchandising knowledge of the more than 6000 members of the New York State Pharmaceutical Association.

Horace Walker has been named executive secretary of the **District of Columbia Pharmaceutical Association.** Mr. Walker's headquarters will be in the newly established office in the Union Trust Building, Fifteenth and H Sts., N. W.

The Dayton Druggists Association has changed its name to the **Miami Valley Pharmaceutical Association** to provide an organization for those pharmacists in surrounding towns which are not already included in some other group. Officers of the new association include: John Somerlot, president; Homer Gleadell, first vice-president; Steve Raynes, second vice-president; Robert J. Birmingham, secretary; and Stanley Phillipp, treasurer.

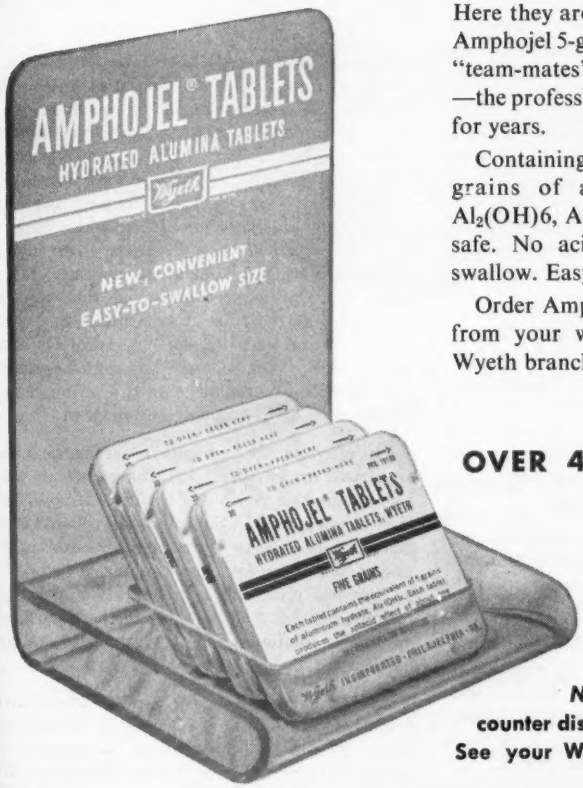
Otto Moosbrugger, secretary of the Dayton Druggists Association for 33 years, was named secretary of the new group, but resigned because he felt that his health no longer permitted him to

BRIEFLY NOTED

(*Continued on Page 248*)

Here's the antacid you can dispense with the assurance it's

SAFE-NO ACID REBOUND



Here they are in this new display: Amphojel 5-grain Tablets...worthy "team-mates" of liquid Amphojel —the profession's antacid of choice for years.

Containing the equivalent of 5 grains of aluminum hydrate, $Al_2(OH)6$, Amphojel Tablets are safe. No acid rebound. Easy to swallow. Easy to carry.

Order Amphojel 5-grain Tablets from your wholesaler or nearest Wyeth branch.

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New, attractive, plastic counter display now available. See your Wyeth representative.

AMPHOJEL® 5-GRAIN TABLETS

Safe neutralizers . . . sound profitmakers

BRIEFLY NOTED

(Continued from Page 246)

serve. As a tribute to his many years of service he was elected secretary emeritus. Mr. Moosbrugger, who has operated the drug firm bearing his name for 52 years, was the first president of the Dayton Druggists Association, and its secretary each year since.

Officers of the **Oklahoma University Pharmaceutical Association** elected at its recent 15th Annual Convention include: President, Jim Downing, Norman; vice-president, Jack Graves, Marlow; secretary, Mary Carroll, Ponca City; treasurer, Wanda Burdick, Ponca City; parliamentarian, John Bragg, Henrietta, Texas; sergeant-at-arms, Gene Russ, Stillwater, Okla.; honorary president, Dr. Ralph W. Clark, University of Kansas; and honorary vice-president, Walter Cousins, Jr., Dallas, Texas.

A. J. Toller of Sioux City has been installed as president of the **Iowa Pharmaceutical Association.** Other officers elected were: Walter Myers, Oakland, president-elect; Edward S. Rose, Iowa City, first vice-president; Harvey Norgaard, Harlan, second vice-president; and P. J. Jepson, Newton, treasurer. Charles P. Roth, of Ackley, was named honorary president.

A bill in the New York State Legislature that would increase control over the sale of barbiturates was opposed by the **Broome County Pharmaceutical Association** at a recent meeting. Frank A. Emma of Utica, president of the New York State Pharmaceutical Association, and Nicholas S. Gesoalde of New York City, executive secretary of the State association, spoke at the meeting.

Calvin Berger, New York City pharmacist resident of Chappaqua, N. Y., discussed professional relations between physicians and pharmacists at the February meeting of the **Westchester County Pharmaceutical Association.**

The effect of socialized medicine on pharmacists was outlined at a recent meeting of the **Mohawk Valley Pharmaceutical Association.** Leslie Jayne, Albany, secretary of the New York State Board of Pharmacy, was the principal speaker.

In recognition of his long-continued contribution to the upbuilding of the State, Louis S. Stein of Hibbing, Minn., president of the **Minnesota State Pharmaceutical Association,** has been presented with The Minneapolis Star and Tribune Award for Leadership in Minnesota. The presentation was made at the 65th Annual Convention of the Minnesota State Pharmaceutical Association in Minneapolis on March 23. The award consists of a watch pendant inscribed "For Leadership in Minnesota" and a framed certificate which reads: "In Recognition of Leadership in Minnesota. Whereas Louis S. Stein as President of the Minnesota State Pharmaceutical Association has given a service to Minnesota that has added to this State's supremacy as a place in which to live and work, has brought additional respect to his organization and has enhanced his own prestige as a citizen, The Minneapolis Star and Tribune present to him this Leadership Award."

HOSPITAL PHARMACY

The Southeastern Hospital Pharmacy Association will hold its annual meeting in conjunction with the Southeastern Hospital Conference in Biloxi, Miss., on April 28 and 29. Albert Lauve, Chief Pharmacist at Mercy Hospital in New Orleans will be installed as president of the Southeastern group at this meeting.

Hospital pharmacy was represented by Dr. W. Arthur Purdum, Chief Pharmacist at **Johns Hopkins Hospital** and president of the American Society of Hospital Pharmacists, at the recent meeting of the American College of Surgeons in Washington, D. C. Representatives from all departments of the hospital were on the forum to discuss "Application of the Point Rating System in Hospitals under the Hospital Standardization Program." On applying the Point Rating System to the pharmacy department, Dr. Purdum recommended that the pharmacy be removed from the "Adjunct and Service Divisions" and placed under "Essential Divisions." The A. C. S. Point Rating System for hospitals, as well as minimum standards for the various hospital departments, is now undergoing revision.

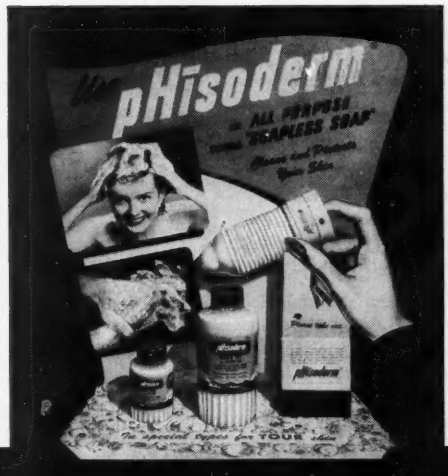
The program has been announced for the **Fourth Institute on Hospital Pharmacy** which will be held on the University of California Campus during the week of June 27. Subjects to be covered include manufacturing in the hospital pharmacy, application of pharmacy laws to hospitals, a "workshop" on hospital pharmacy administration and policy, research in the hospital pharmacy, discussion of minimum standards, and the preparation of sterile medications.

The **Ohio Society of Hospital Pharmacists** held their ninth annual meeting in Columbus on March 25 and 26. Speakers on the program were George J. Gray, Narcotic Agent, Columbus; Hugh C. Muldoon, Dean, Duquesne University School of Pharmacy; and Paul Wilcox, Director of Pharmaceutical Research, Sharp & Dohme, Inc. A round-table discussion on The Pharmaceutical Survey was also held.

The January–February issue of *The Bulletin of the American Society of Hospital Pharmacists* includes a list of 327 new general hospitals being constructed under the Hospital Survey and Construction Act.

BRIEFLY NOTED

(Continued on Page 250)



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BRIEFLY NOTED

(*Continued from Page 248*)

A distribution of these new hospitals by size shows that 190 are for less than 50 beds, 92 are for 50 to 100 beds, and 45 are for hospitals of 100 beds or more. Every one of these will require some type of pharmaceutical service. It is urged that if a new hospital is being built in a given community, pharmacists in that community offer their services in planning for adequate pharmaceutical service. Questions in regard to floor plans for hospital pharmacies, necessary equipment and supplies, and general information on setting up a pharmacy department, may be addressed to the Division of Hospital Pharmacy at A. PH. A. Headquarters.

Hans S. Hansen, administrator of Grant Hospital in Chicago and a former president of the A. S. H. P., will speak on "The Economic Importance of a Hospital Pharmacy Formulary" at the annual meeting of the **Southeastern Hospital Conference** in Biloxi, Miss., April 27–29.

Hospital Pharmacists in Seattle, Wash., are initiating plans to organize a local organization.

MANUFACTURERS

Harry J. Towers has been appointed manager of **E. R. Squibb & Sons'** newly organized retail distribution department.

Aaron F. Levy, operations manager of the penicillin plant of **Schenley Laboratories, Inc.**, at Lawrenceburg, Ind., has been named a vice-president and director of the company. The company will soon begin large-scale production and marketing of streptomycin.

"Communicable Diseases," **Cutter Laboratories'** latest 16-mm. color and sound motion picture, is now available for showing to interested medical groups which may include hospital staffs, medical school classes, public health groups, and medical association meetings.

Eli Lilly & Co., Indianapolis, Ind., has named E. B. Kipfer sales director for the firm's marketing division.

Parke, Davis & Co., Detroit, Mich., has announced the appointment of Dr. Leon A. Sweet as director of research and products development, C. Fritsch as vice-president and general manager, Dr. George Rieveschl, Jr., as director of chemical research, and Dr. Oliver Kamm as research consultant.

The prescription department, heart of the drugstore, is the subject of "Toward Better Pharmacy," new sound and color motion picture being introduced by **Owens-Illinois Glass Co.**, Toledo, Ohio. The film, based on a consumer survey on prescription departments, has a running time of 18 minut and it is 16-mm. The picture is available for sho ing to pharmaceutical and other association colleges of pharmacy, manufacturers' groups, co ventions, sales meetings, and civic organizations.

The modern new $7,000,000 building of **Smith Kline & French Laboratories**, Philadelphia, Pa manufacturers of pharmaceuticals, was official opened last month. Over 3000 persons toure the impressive, five-story building, which contain approximately 400,000 square feet. The guest viewed research laboratories, manufacturing unit and administrative offices in actual operation The building and grounds occupy a full city bloc within six blocks of the heart of the city.

The need for closer cooperation between the pharmaceutical industry and universities having facilities for medical research was urged in a recer speech by Francis C. Brown, president of **Scherin Corp.**, Bloomfield, N. J., before a meeting of the medical alumni of New York University College of Medicine at New York City.

Richard R. Higgins nas been elected executive vice-president of **The Kendall Co.**, Boston, Mass., manufacturers of surgical dressings and textile specialties.

Dr. Chester E. Poetsch has become associated with **Smith, Kline & French Laboratories** as a pharmaceutical chimist in the research laboratories.

Sharp & Dohme, Inc., has announced the appointment of Elmer W. Metzger as director of domestic branches.

Amber shelf bottle designed for the storage of liquid pharmaceuticals in prescription departments and laboratories with special space-saving advantages is the most recent addition to the **Owens-Illinois Glass Co.** line of prescription ware. The new package comes complete with pour-out finish and brown molded plastic cap.

Sterling-Winthrop Research Institute will start moving into its new $3,000,000 laboratory building in June of this year, Dr. Maurice L. Tainter, vice-president and director, has announced. A division of Sterling Drug, Inc., the Institute conducts research for all operating Sterling divisions and subsidiaries which have a total of 51 plants and 118 branches throughout the world.

Torsion Balance Co. has developed a new prescription balance. The new balance has undergone a complete re-engineering and modernization of design. From an engineering viewpoint, the departures from past practice are significant. The torsion

BRIEFLY NOTED

(*Continued on Page 252*)

NOT ONLY FOR MEN

Androgenic hormone, despite its name, is not limited to the male sex, for it is present in appreciable amounts in the female where it is presumed to be necessary for the normal physiology of women. Moreover, it is not, strictly speaking, only a sex hormone, for its metabolic effects are considerable, particularly as regards protein anabolism. It has valuable therapeutic action in a variety of conditions which can be effectively and economically obtained with the ORETON preparations.

ORETON* (Schering's Testosterone Propionate U.S.P. XIII in ampuls and in vials for intramuscular injection)

ORETON Buccal Tablets (Schering's Testosterone Propionate U.S.P. XIII in POLYHYDROL base for buccal administration)

ORETON-M* (Schering's Methyltestosterone U.S.P. XIII in tablets)

ORETON-M Ointment (Schering's Methyltestosterone U.S.P. XIII ointment)

ORETON-F* (Schering's free testosterone in pellets for subcutaneous implantation)

have been successfully employed in men for eunuchoidism and the male climacteric; in women for metrorrhagia and dysmenorrhea; and in children for prematurity and dwarfism.

Packaging

ORETON–1 cc. ampuls containing 5, 10 or 25 mg.; boxes of 3, 6 and 50 ampuls. Multiple dose vials of 10 cc., 25 or 50 mg. per cc.; box of one vial.

ORETON Buccal Tablets–5 mg.; boxes of 30 and 100 tablets.

ORETON-M Tablets–10 mg.; boxes of 15, 30 and 100 tablets; 25 mg.; boxes of 15 and 100 tablets.

ORETON-M Ointment–Tube of 50 Gm.; 2 mg. per Gm.

ORETON-F Pellets–75 mg. pellet in individual vials; boxes of 1 and 3 vials.

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ORETON

SCHERING

BRIEFLY NOTED

(Continued from Page 250)

bands are of a newly discovered alloy that will eliminate the hazards of corrosion. In mechanical design the internal mechanism has been much modernized to take advantage, as the maker points out, of extremely high precision manufacture made possible by the complete modern retooling of this instrument-making plant.

AT RANDOM

The first public health center in the United States built with federal aid was dedicated and opened to the public in Birmingham, Ala., last month. The principal dedicatory address was made by Dr. Leonard A. Scheele, Surgeon General of the Public Health Service. The million-dollar health center will house offices of the Jefferson County Board of Health, Alabama State laboratories and the Birmingham city health department.

Though the American people spend only about twice as much for medical services as for dental care, our research institutions are devoting more than one hundred times as much money to medical research as to dental research, Dr. H. Trendley Dean, director of the National Institute of Dental Research, told members of the **National Advisory Dental Research Council** recently. "I doubt if a million dollars a year is being devoted to dental research in this country, as compared with about $110,000,000 to medical research," Dr. Dean said. "Dental services, on the other hand, cost about $900,000,000, as compared with $1,700,000,000 for medical services."

Five thousand dollars worth of scarce medicine has been packed by the **Pharmakon Club,** an organization of Polish druggists, whose members raised the money to aid the sick in Poland.

New narcotic order forms for retail pharmacists were put into use April 1, together with certain changes designed to simplify reporting for wholesalers and manufacturers, the **Bureau of Narcotics** has announced. Use of the new forms will impose no burdens on druggists, but will make things somewhat easier for wholesalers and manufacturers. Forms will be made out in triplicate by retailers instead of in duplicate, this constituting the primary change at the retail level, the Bureau said.

A plan which seeks to prevent recurrence in this country of a serious epidemic of influenza like that which occurred in 1918 has been developed by the Surgeons General of the U. S. Public Health Service, Army, Navy, and Air Force. The plan is part of an international program set up by the **World Health Organization** last year. An Influenza Information Center has been established at the National Institutes of Health of the Public Health Service to serve as the headquarters of the program in this country.

According to the **Veterans Administration,** competition for positions in pharmacy will grow keener during the next few years. Pharmacy graduates, the V. A. said, still are in "strong demand" this year, but larger graduating classes are in prospect for the next several years, with the number of bachelors' degrees granted in 1950 perhaps doubling the 1948 total of 1975 graduates.

Research scientists from all parts of the country will discuss recent advances in antibiotics research at the second national symposium to be held under the auspices of the **Antibiotics Study Section** of the **National Institutes of Health** on April 11 and 12 at the Department of Agriculture Auditorium, Washington, D. C. The first national symposium on antibiotics research was held two years ago, at which time 37 papers were presented, providing the latest information on penicillin, streptomycin, bacitracin, subtilin, tomatin, and other chemotherapeutic agents. The Antibiotics Study Section is composed of outstanding authorities in the field of antibiotics who serve as special consultants to the National Institutes of Health. Research scientists and others who wish to attend the 1949 symposium or who have original, unpublished observations to present should communicate with Dr. Leonard Karel, executive secretary of the Antibiotics Study Section, National Institutes of Health, Bethesda, Md.

The sixth edition of the **Accounting and Record System for the Retail Drug Store** has been prepared and published by Eli Lilly and Co. The book contains 194 pages, is bound in a black, durable cover, and may be obtained by the proprietor of a drug store through his Lilly medical service representative without charge.

Cincinnati may lay claim, though not proved, to the first **civilian ambulance service** in the United States. John E. Ranson recently stated that Records of the Cincinnati General Hospital indicate that the city had a vehicle used to transport sick or wounded patients prior to 1865. New York City's first municipal ambulance, he says, did not begin operating—at Bellevue Hospital—until 1870. Washington, D. C. established an ambulance service in 1875, and Richmond, Va., established one in 1876. The early ambulances were horsedrawn, but in most American cities the change over to motor-driven vehicles was made between 1908 and 1920.

Dr. Bettylee Hampil, director of Virus Research, Sharp & Dohme, Inc., in an address at the fall meeting of the Texas Branch of the Society of American Bacteriologists at the University of

BRIEFLY NOTED

(Concluded on Page 256)

Orapen-250

It is now possible to give 250,000 units of crystalline penicillin G (potassium salt) in one coated, pleasant-tasting, buffered tablet, if you specify the Schenley product. Ample evidence supports the value of the oral administration of penicillin when given in sufficiently high dosage. Clinical reports show that even serious infections due to penicillin-sensitive organisms—such as acute respiratory illness,[1,2,3,4] impetigo,[4] gonorrhea,[5] and rheumatic fever (prophylaxis)[6]—can be treated effectively by this convenient, painless method of administration.

ORAPEN IS UNIQUE
A special coating completely masks the taste of penicillin. ORAPEN is stable at ordinary room temperatures, eliminating necessity for refrigeration.

REFERENCES:
1. J. Pediat. 32:1 (1948).
2. Am. J. M. Sc. 213:513 (1947).
3. J. Pediat. 32:119 (1948).
4. New England J. Med. 236:817 (1947).
5. New York State J. Med. 48:517 (1948).
6. Lancet 1:255 (1947).

Orapen-250
Orapen-100 · Orapen-50
[PENICILLIN TABLETS SCHENLEY]
Each containing 250,000, 100,000, or 50,000 units of Penicillin Crystalline G, buffered with calcium carbonate.

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ORAPEN-100: Available in bottles of 12 and 100.
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New A. Ph. A. Members

THE ASSOCIATION EXTENDS A CORDIAL WELCOME TO THE FOLLOWING MEN AND WOMEN WHO WERE ACCEPTED FOR ACTIVE MEMBERSHIP DURING THE MONTH PRECEDING PREPARATION OF THIS ISSUE.

ARIZONA

Brandt, J. M., Phoenix
McLymont, J. V., Douglas

CALIFORNIA

Alekna, Emily A., Pasadena
Borgfeldt, Arnold G., Sacramento
Bresticker, Ben, Los Angeles
Crosson, W. B., Oakland
Klatt, G. A., Pomona
Kuck, Marie B., North Hollywood
Sprinkle, Mildred, Los Angeles
Stauffer, Edward E., Alhambra
Wackerman, Frank J., Arcadia

DISTRICT OF COLUMBIA

Davis, George W., Washington

FLORIDA

Beskind, Sidney, Miami
Brown, Albert T., Jacksonville
Corn, Charles, Miami Beach
Davis, Jack, Miami Beach
Foreman, Harold, Miami Beach
Fox, Thomas H., Miami Beach
Grenald, Ben, Miami Beach
Grice, Herbert, Clearwater
Groover, Gene, Miami Beach
Harrell, Lee W., Gainesville
Herwitt, Maurice, Miami
James, Robert W., Miami
Kantor, Max, Miami Beach
Keown, Robert W., St. Peterburg
Kleinbart, Dave, Miami Beach
Lachman, Herman, Miami
Martin, Robert, Miami Beach
McCall, William C., Pine Castle
McMillan, R. H., St. Petersburg
Newman, Abraham, Miami Beach
Oglesby, Robert M., Bartow
Pace, Harry W., Palmetto
Patterson, J. L., Delray Beach
Pepper, Sidney, Miami Beach
Pfaff, J. Paul, St. Petersburg
Schectman, Abraham, Miami
Snyder, F. O., Orange Park
Stadnik, John, Miami Springs
Stern, Jerome, Miami
Sternick, Bernard M., Miami
Taylor, George O., Miami Beach
Thomas, Lee Aquilla, Williston
Whalen, George T., Miami
Whidden, Dr. L. A., Orlando
Yaguda, Frank A., Hollywood

IDAHO

Kihara, Mrs. Cisco, Pocatello

ILLINOIS

Craig, Henry, Chicago
Gray, Eugene C., Palatine
Lawson, Peter, Chicago
Norris, Emmet N., Waukegan
O'Leary, John J., Chicago
Sister Mary G. Holtgrave, P.H.J.C., Chicago
Stettner, Richard F., Elgin
Ueber, William J., Marengo
Varzhabedian, Berj M., Chicago

INDIANA

King, Jean Yun-hua, Lafayette
Miya, Midori, West Lafayette

KENTUCKY

Goldstein, Marvin, Louisville
Hamilton, Charles E., Georgetown
Hutsinpiller, C. L., Prestonburg
Rosenberg, Arnold J., Louisville

LOUISIANA

Nugent, Elsie, New Orleans

MARYLAND

Coleman, Mary Ann, Baltimore
Eichberg, Daniel M., Baltimore
Hullick, John H., Baltimore

MICHIGAN

Derbabian, Ohannas J., Detroit
Hansen, Clarence, Jr., Detroit
Kapps, Frank L., Detroit
Phillips, Vance C., Port Huron
Powers, Joseph C., Detroit

MINNESOTA

Griffin, Jess, Minneapolis

MISSOURI

Curts, George D., Kansas City
Mendenhall, Norman R., Richmond Heights

NEBRASKA

Sprague, William H., Omaha

NEW HAMPSHIRE

Dawson, Mrs. Beatrice, Manchester

NEW JERSEY

D'Allegro, Justin, Newark
DeBenedictis, Joseph M., West Orange
Knight, Joseph, Passaic
Lach, Bruce F., Elizabeth
Packet, Peter, Elberon
Riedinger, Edward J., Irvington
Rosenbluth, Martin H., South Orange
Schumacher, Raymond, Newark

New York

Barton, Willard K., Albany
Mayer, John J., Port Jervis

NORTH DAKOTA

Moore, James W., Bismarck

OHIO

Head, Charles C., Toledo
Mack, Walter L., Toledo
McGuire, John L., Toledo

OREGON

Felter, William C., Portland
Gilman, Ray E., Portland
Hart, R. Franklin, Portland
Wilson, James E., Portland
Zimmer, Howard, Sherwood

PENNSYLVANIA

Hafer, Harold R., Reading
Liner, Milton H., Pottsville
Smith, Paul J., Philadelphia

TENNESSEE

Beloate, Robert E., Memphis
Puryear, George L., Memphis
Rose, Mrs. Beulah S., Johnson City
Roy, Shane, Brownsville
Taylor, R. Ben, Memphis

TEXAS

Craighead, E. F., Luling
Wolfthal, Abraham, Fort Worth

UTAH

Beames, Reginald F., Ogden

VIRGINIA

Lash, Frank, Jr., Richmond
Nottingham, J. Curtis, Richmond

WASHINGTON

Kelley, Albert H., Seattle
White, Robert H., Spokane

WISCONSIN

Holz, Erra, Racine
Rehorst, George C., Milwaukee
Sister M. Medicia Bride, O.S.F., Milwaukee

FOREIGN

Colleck, Sam N., Windsor, Ont., Canada
McDermott, Charles B., Windsor, Ont., Canada
Gaillard, Jean-Pierre, Richelieu, Montreaux-Territet, Switzerland
Jauregui, Dr. Manuel G., Madrid, Spain
Padval, Vishnu A., Bombay, India
Thorsteinsson, Scheving, Reykjavik, Iceland

Deceased Members

Alderman, Earl R., Silver Springs, N. Y., Oct., 1948
Carter, Elmer M., Knoxville, Tenn., Jan. 26 1948
Darbaker, L. K. (a life member), Pittsburgh, Pa., Feb. 6, 1948
Haise, Adolph E., Milwaukee, Wis., week of Jan. 10, 1949
Huth, Waltel Co., Milwaukee, Wis., Dec. 1, 1947
Ingram, Peter T., New York, N. Y., Dec. 17, 1948
Johnson, Charles Willis (a life member), Seattle, Wash., Jan. 4, 1949
Kahl, David L., Sacramento, Calif., Jan., 1948
Kurtz, Irving W. (a life member), St. Louis, Mo., Feb. 16, 1949
Leigh, Townes Randolph, Gainesville, Fla., Feb. 15, 1949
Seltzer, Eli J., Philadelphia, Pa., Aug. 14, 1948
Wells, Julian M., San Francisco, Cal., Jan., 1949
Whitney, David Victory (a life member), Kansas City, Mo., Dec. 22, 1948

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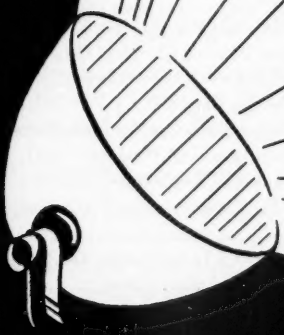

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BRIEFLY NOTED

(Concluded from Page 252)

Texas, said that for the first time under reproducible and controlled conditions it has been proved conclusively that irradiation, or treatment of blood plasma with ultraviolet rays, will prevent the danger of contracting jaundice in plasma transfusions. After more than a year's intensive experimentation, Dr. Hampil disclosed, they have designed and perfected the first machine ever developed specifically for the commercial irradiation of plasma. Entirely automatic, the machine is enclosed in a hood and the complete operation is carried out under aseptic conditions.

"Sales Opportunities for Drug Store Products," a comprehensive new study of the Nation's $3,616,000,000 market for drug store products has just been published by the Research Department of The Curtis Publishing Company. The 190-page report measures the value of both the consumer and professional market for drug store products in every county in the Nation and every city of 5,000 population and over, and is designed to help manufacturers and distributors of such products solve some of their distribution and advertising problems.

NOTES ON LEVIGATING AGENTS

(Concluded from Page 217)

of lanolin as the levigating agent. U. S. P XIII recommends the use of 7% of lanolin.

3—Ichthammol Ointments be prepared using polyethylene glycol 400 monostearate as the levigating agent.

4—Phenol Ointments be prepared according to the official method. (Glycerin 2% is the levigating agent.)

5—Hydrophilic Ointment U. S. P. XIII be used as a base whenever possible since it requires no additional levigating agent and thus objection to the use of lanolin and other substances as "hidden" ingredients is eliminated.

6—Ointments of coal tar, Peruvian balsam or ichthammol be prepared using Hydrophilic Ointment U. S. P. XIII as the base.

7—Color variations seen in coal-tar ointments are due (*a*) to the incorporation procedures and (*b*) the coal tar employed. U. S. P. XIII method of preparation is recommended.

8—Propylene glycol be substituted for the glycerin in the U. S. P. XIII Hydrophilic Ointment formula.

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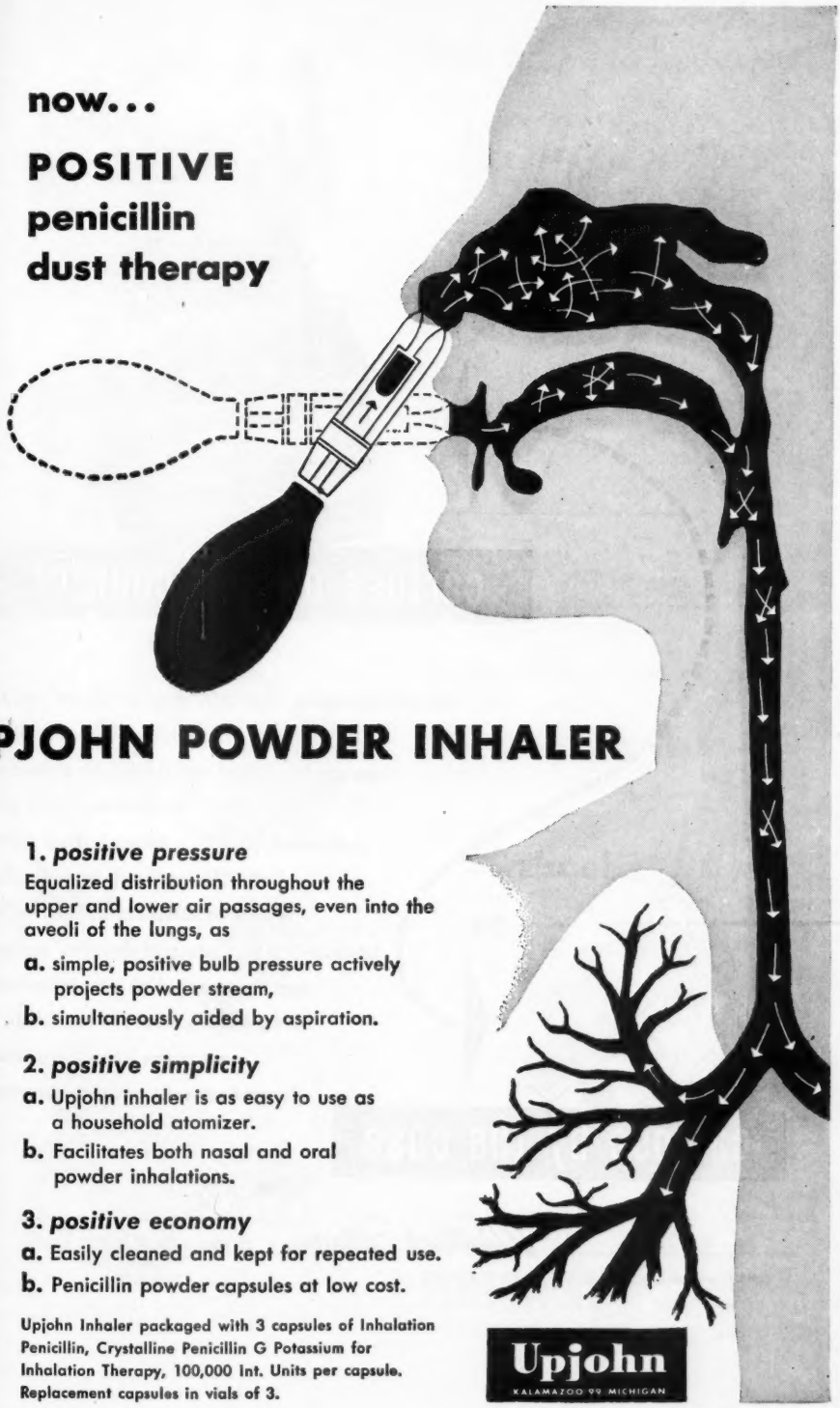

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PUBLISHED by the American Pharmaceutical Association. Publication office: 20th and Northampton Streets, Easton, Pa. Editorial office (and address for all correspondence): 2215 Constitution Ave., N. W., Washington 7, D. C.

ANNUAL SUBSCRIPTION—Journal of the American Pharmaceutical Association, complete (both editions): United States and Pan America $7; Canada $7.70; other foreign $8; members of the American Pharmaceutical Association with dues, $4. Each edition, Scientific Edition or Practical Pharmacy Edition: United States and Pan America $4; Canada $4.35; other foreign $4.50. Single numbers, either edition: United States and Pan America $0.35; Canada $0.40; other foreign $0.50.

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ENTERED as second-class matter January 23, 1917, at the Post Office at Easton, Pennsylvania, under the act of March 3, 1879, as 24 times a year: Scientific Edition monthly on the 5th; Practical Pharmacy Edition monthly on the 20th. Acceptance or mailing at a special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized July 10, 1918.

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Description: Tablets containing purified conjugated, water-soluble estrogens derived from gravid mares' urine. Potency expressed as sodium estrone sulfate.

Form Supplied: Tablets of 0.3 mg. in bottles of 100; 0.625 mg. and 1.25 mg. in bottles of 100 and 1000; tablets of 2.5 mg. in bottles of 25 and 100.

Action: Wherever estrogens are indicated.

Administration: According to clinical response.

Source: E. R. Squibb and Sons, 745 Fifth Ave., New York.

AUREOMYCIN HYDROCHLORIDE

Description: Capsules containing 50 mg. of aureomycin hydrochloride.

Form Supplied: Vials of 25 capsules.

Action: An antibiotic for the treatment of atypical pneumonia, Rocky Mountain spotted fever, undulant fever, typhus, rickettsialpox, and many other infections.

Administration: 50 mg. as directed, for children.

Source: Lederle Laboratories Division, American Cyanamid Co., Pearl River, N. Y.

BI-PEN

Description: Crystalline procaine penicillin G and buffered crystalline penicillin G potassium for aqueous injection.

Form Supplied: Combination package containing a single-dose of 400,000 units together with a 1-cc. ampul of water for injection, in boxes of 5 and in a multiple-dose vial containing 2,000,000 units or a quantity sufficient for 5 injections.

Action: Treatment of diseases amenable to penicillin.

Administration: 400,000 units intramuscularly.

Source: C. S. C. Pharmaceuticals, 17 E. 42nd St., New York 17, N. Y.

CAFERGONE

Description: Tablets containing 1 mg. ergotamine tartrate and 100 mg. caffeine. Also known as E. C. 110.

Form Supplied: Bottles containing 20, 100, 500, and 1000 tablets.

Action: Treatment of migraine, histamine, and tension headaches.

Administration: 2 to 4 tablets for the individual attack. Contraindicated in vascular disease, angina pectoris, impaired renal or hepatic function, and during pregnancy.

Source: Sandoz Pharmaceuticals, New York 14, N. Y.

CALCIFEROL (Tablets and Injection)

Description: Tablets containing 50,000 units of vitamin D_2; and an injection containing 500,000 units of vitamin D_2 per cc. in a highly purified thin vegetable oil.

Form Supplied: Tablets in bottles of 100; injection in 10-cc. vials.

Action: Vitamin D therapy.

Administration: As determined by the physician.

Source: Kremers-Urban Co., Milwaukee, Wis.

DIAZINE-CITRATE TABLETS

Description: Tablets containing 0.5 Gm. sulfadiazine and 0.52 Gm. sodium citrate.

Form Supplied: Bottles of 100, 500, and 1000 grooved tablets.

Action: Treatment of diseases amenable to sulfadiazine with a minimum formation of sulfonamide crystals in the urinary tract.

Administration: Initial dose, 6 tablets; maintenance dose, 2 tablets every 4 hours.

Source: S. E. Massengill Co., Bristol, Tenn.

NEW PRESCRIPTION PRODUCTS
(Continued on Page 264)

now

parenteral HORMONE THERAPY VIA buccal ADMINISTRATION

Schering HORMONE buccal tablets

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parenteral HORMONE THERAPY VIA buccal ADMINISTRATION

NEW PRESCRIPTION PRODUCTS

(Continued from Page 262)

DIHYDROSTREPTOMYCIN

Source: Additional sources of dihydrostreptomycin to those listed in the February issue of THIS JOURNAL (page 72) are: Cutter Laboratories, Berkeley, Calif.; Heyden Chemical Corp., 383, Seventh Ave., New York; Merck and Co., Rahway, N. J.; and Charles Pfizer and Co., 81 Maiden Lane, New York.

DIPHENTOIN

Description: Capsules containing diphenylhydantoin sodium 0.1 Gm.

Form Supplied: Bottles of 100 and 1000 capsules.

Action: Treatment of epilepsy.

Administration: 0.1 Gm. 3 times daily as necessary to prevent seizures.

Source: S. E. Massengill Co., Bristol, Tenn.

MONITAN

Description: Palatable liquid solution of sorbitan monooleate polyoxyethylene derivative.

Form Supplied: 12-oz. amber bottles.

Action: Emulsifies fats, rendering them more absorbable.

Administration: 1 to 2 teaspoonfuls 3 times daily with meals.

Source: Ives-Cameron Company, 22 East 40th St., New York 16, N. Y.

PEN-AQUA

Description: Crystalline procaine penicillin G with buffered penicillin G potassium for aqueous injection.

Form Supplied: Vials containing 2,000,000 units.

Action: Treatment of diseases amenable to penicillin.

Administration: 400,000 units as indicated.

Source: Bristol Laboratories, Syracuse, N. Y.

PERTUSSIS VACCINE ALHYDROX

Description: Pertussis vaccine containing 30,000 million *H. pertussis* organisms and aluminum hydroxide to delay the absorption of antigenic components.

Form Supplied: 7.5-cc. vials.

Action: Immunization of infants against whooping cough.

Administration: 3 deep injections of 0.5 cc., 4 to 6 weeks apart.

Source: Cutter Laboratories, Berkeley 10, Calif.

POTASSIUM THIOCYANATE ENTERAB TABLETS

Description: Enteric coated tablets containing 60 mg. or 0.2 Gm. of potassium thiocyanate each.

Form Supplied: Bottles of 100 and 1000 tablets.

Action: Symptomatic treatment of hypertension.

Administration: 6 to 9 grains daily, but dosage must be adjusted to give the proper blood level. The quantity in the blood should be determined every 7 to 10 days following initiation of treatment and less frequently when a stable maintenance dosage has been established. It should be administered with caution to elderly patients or patients with kidney impairment, drug sensitiveness, mild osteoporosis or congestive heart failure.

Source: Abbott Laboratories, North Chicago, Ill.

PREGNYL

Description: Purified, standardized human chorionic gonadotropin, in vials as a dry powder. To be mixed with accompanying solvent prior to use to make solutions of 1000 to 10,000 I. U. per cc.

Form Supplied: Multiple-dose vials containing 10,000 I. U. of powder and 10 cc. of sterile solvent in separate ampuls.

Action: In the male in cryptorchidism and hypogenitalism; in the female in disturbances of early pregnancy and menstrual disorders due to defective luteal function.

Administration: Dosage varies with the individual patient and his response from 500 to 10,000 I. U.

Source: Organon Inc., Orange, N. J.

PROCIPITOID

Description: Protamine precipitated diphtheria toxoid.

Form Supplied: 1-cc. and 5-cc. vials.

Action: Immunization against diphtheria.

Administration: 2 doses of 0.5 cc. each subcutaneously at 4 to 6 weeks' intervals.

Source: Sharp and Dohme, Philadelphia 1, Pa.

RESMICON

Description: Tablets containing 500 mg. of Anion exchange polyamine resin and 170 mg. of gastric mucin.

Form Supplied: Bottles of 84 tablets.

Action: Acid absorbent demulcent.

Administration: One to 2 tablets every 1 to 3 hours.

Source: Whittier Laboratories Division, Nutrition Research Laboratories, Chicago 30, Ill.

SEMIKON

Description: Tablets containing 50 mg. of N,N-dimethyl-N′(2-pyridyl)-N′-thenyl ethylenediamine hydrochloride.

Form Supplied: Bottles of 100 and 500 tablets.

Action: Antihistaminic.

Administration: 50 to 100 mg. administered 1 to 4 times daily.

Source: S. E. Massengill Co., Bristol, Tenn.

NEW PRESCRIPTION PRODUCTS

(Concluded on Page 320)

For troubles that are skin deep

For skinned knees, knuckles and elbows, for scratches, minor burns, cuts, and in fact for all the varied skin damage of childhood, there's no better antiseptic, dry surgical dressing than B·F·I powder.

And B·F·I is good for many other skin ailments. Fungus infection of the toes and feet ("athlete's foot") generally yield to soap, water, towel, and dry, astringent, B·F·I powder. It's also used to relieve itching, burning foot fatigue, prickly heat, diaper rash, sunburn, and the messy dermatitis due to poison ivy or poison oak.

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Alcohol (by volume)..... 17%
Iron (as proteinate)..... 120 mg.
Liver Concentrate (20:1)..... 500 mg.
Cane sugar, glycerine, flavoring...aa...q.s.

Tablets **HEMABOLOIDS** *with* Liver Concentrate

Each tablet represents:
Iron (as proteinate)..... 35 mg.
Liver Concentrate (20:1)..... 100 mg.

HEMABOLOIDS ARSENIATED

Each fluid ounce represents:
Alcohol (by volume)..... 17%
Arsenous Acid..... 1/20 gr.
Iron (as proteinate)..... 120 mg.
Cane sugar, glycerine, flavoring...aa...q.s.

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With Bi-Pen, the advantages of rapidly absorbed soluble crystalline penicillin and slowly absorbed procaine penicillin are realized in a single preparation.

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Bi-Pen is available at all wholesalers in the following package sizes: (1) a combination package containing a single dose (400,000 units) in a rubber-stoppered vial and a 1 cc. size ampul of sterile distilled water; (2) a package containing 5 single dose vials (water not supplied); (3) a multiple dose rubber-stoppered vial containing 2,000,000 units or 5 doses of 400,000 units each.

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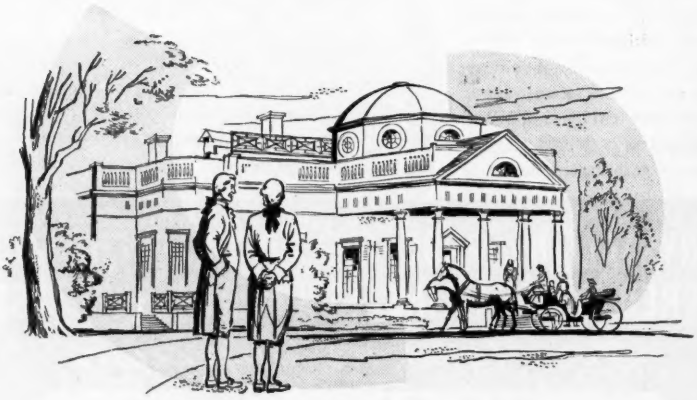
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